BirdLife INTERNATIONAL ASIA PARTNERSHIP

BIRD RED DATA BOOK FOR ASIA

Workshop for South Asia
Coimbatore, India

February 1995

Supported by

Environmental Agency of Japan

Wild Bird Society of Japan
and
Sálim Ali Centre for Ornithology and Natural History

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THREATENED BIRDS OF ASIA:
THE BirdLife INTERNATIONAL RED DATA BOOK

INDIAN NATIONAL WORKSHOP
COIMBATORE, INDIA, 5-6 FEBRUARY 1995
BRIEFING BOOK

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INTRODUCTION

The Asian Partnership of BirdLife International, with the support of the Japanese Environment Agency to the Wild Bird Society of Japan, is embarking on a Red Data Book for the birds of Asia, to be published in 1999. Data-gathering will be undertaken through regional and national initiatives, including workshops.

An Indian national workshop will be held on 5-6 February 1995 in Coimbatore, Tamil Nadu, India (following on from a regional workshop for South Asia, which will be held on 2-3 February).

Objectives

- Evaluate candidate species for inclusion in the Asian Red Data Book against the new IUCN criteria
- Identify sources of data (e.g. books, papers, reports, maps and gazetteers, museums, people)
- Agree on plans for the compilation of data, and preparation of the Red Data Book species accounts
- Agree on standardizations of taxonomy and species names, terminology, etc.
- Develop and approve a workplan for the project

Agenda for India Workshop (5-6 February 1995)

- Objectives of Red Data Book Programme in India
- Introduction to new IUCN criteria for threatened species
- Discussion of candidate threatened species in India
- Identification of sources of information in India
- Identification of sources of information on Indian birds which are outside of the country
- Methods for data collection and synthesis in India
- Workplan, timetable and responsibilities for Red Data Project in India
- Introduction to Important Bird Areas (IBA) programme in India
- Development of national bird conservation network in India

Invitees

SACON is responsible for invitations within India. S. A. Hussain, N. Ichida and S. Kotagama will represent the BirdLife Asian Partnership, and N. J. Collar, M. J. Crosby and R. F. A. Grimmett will represent the BirdLife International Secretariat.

PROJECT DESCRIPTION

Background

Red Data Books are the official lists that identify species threatened with global extinction. These books provide in detail all the information relevant to the conservation of the species at risk. A complete summary of all knowledge is important, because the full and correct course of action depends on full and correct information. Red Data Books therefore directly help prevent extinctions, and thus make a critically important contribution to the preservation of biological diversity.

Since the establishment of the BirdLife Secretariat, two Red Data Books have been published: one on Africa (1985) and one on the Americas (1992). BirdLife has always intended that the third should be about Asia. In 1988 it was judged that there were over 1,000 threatened bird species in the world, of which no fewer than 300 (almost 30%) were Asian. Since then, the number of Asian birds at risk of extinction is believed to have risen very considerably: as many as 400 may now qualify for threatened status. The need for a full Red Data Book is therefore urgent.

Objectives

The Asian Red Data Book (*Threatened birds of Asia*) should:
- identify and fully document all globally threatened species in the Asian region;
- identify the principal threats to the birds of Asia; and
- indicate and prioritize action for all threatened species in terms of key sites (to initiate a list of Important Bird Areas), critical habitats, appropriate management, further research, major issues and relevant policy.

Secondary objectives of the project should be to:
- achieve consensus throughout Asia on the species to be treated;
- involve the full breadth of Asian knowledge and expertise in the documentation of the species;
- build a broad network of Asian groupings and individuals committed to pursuing the actions recommended in the book.

Outputs

The primary output of the project will be:

Threatened birds of Asia: the BirdLife Red Data Book.

However, there will be opportunities for several additional outputs such as *Threatened birds of the Philippines*, *Threatened birds of Indonesia* and indeed any country that wishes to use globally threatened species as the central point of a national Red Data Book.

Region covered

The region to be covered by the Asian Red Data Book extends from Pakistan eastwards to embrace all of Indonesia and northwards to include all Russia east of the Ural Mountains. However, the republics of Central Asia – Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, Tajikistan and Afghanistan – have biogeographical and cultural links with the Middle East, and are therefore not considered for inclusion. Papua New Guinea will be invited to be covered by the book in full; at present it is intended that all Indonesian birds ranging into PNG will be fully covered.

Implementation

The programme of work will be implemented according to a plan approved and overseen by the BirdLife Asia Council.

The work itself will be undertaken in national workshops and/or by the compilation of data at the national level. These workshops and compilations will be undertaken by *national coordinators*, and the project is planned and managed by the Wild Bird Society of Japan. The project is supported financially by the Environment Agency of Japan.

Further work, in the form of an extensive data-gathering survey of literature, museums and itinerant ornithologists, will be undertaken by the *Red Data Book compiler* at the Secretariat, who will also be responsible for entering and harmonizing all the data from the various workshops and compilations.

Methods

The most important method will be the use of *workshops* to draw together all relevant ornithologists and conservationists in a country or region. These people will contribute their knowledge and debate their assessments of all the candidate species that are identified in earlier consultations. The national coordinator will plan time before and after the workshop to ensure maximum involvement and input from his or her constituency, and liaise closely with the Red Data Book compiler (who will provide background information before the workshop, and will help to store, obtain and arrange the information after it).

At the centre of the workshops will be a standard *questionnaire* for each species. This was developed while BirdLife was working with IUCN on the new criteria with which to assess threatened status of species. The questionnaire includes these criteria and also lets people record other factors that adversely influence the conservation status of species. It addresses all the key points that are needed for a standard Red Data Book text: distribution, population, ecology, threats, conservation measures taken, conservation measures needed, and additional items of relevance or interest, plus the requirement to make clear the sources of all this information. The questionnaire can also be used by the national coordinator working as a compiler without recourse to workshops. It can also be sent out by the international compiler to non-native experts, and completed copies then made available to national coordinators.

The expertise to be tapped by the workshops and questionnaires will be supplemented by reviews and analyses of existing *literature*, and by unpublished information derived from material held in *museums*. Work here will divide between the international compiler, who will concentrate on the international published sources of data and on European and American museum collections, and the national coordinators, who will attempt to trace relevant national publications, local literature and government documents (e.g. relevant development plans), recent national and local maps with new habitat information, and so on.

THE NEW IUCN CRITERIA

THE IUCN CRITERIA for assigning threat status and category, in use in various forms ever since the RDB programme began in the 1960s, have been a source of recurrent uncertainty and dissatisfaction, and moves have been made since the mid-1980s to replace them with a less subjective and more accountable system, using numerical criteria that reflect stepwise increases in the risk of extinction (Figure 1) based on measured or reasoned rates of decline, population levels, and range sizes (for a brief history of this development, see Collar and Stattersfield 1994, Mace and Collar 1994).

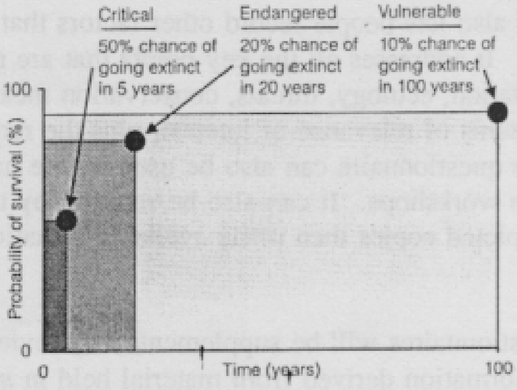

Figure 1. Extinction probabilities and the IUCN threat categories. This representation indicates the relative difficulty (represented by the relatively small, dark rectangles enclosed by their threshold lines) of qualifying as Endangered and, especially, Critical, compared with Vulnerable (large, pale rectangle).

The first outline of the new system was in Mace and Lande (1991). Although their proposals were explicitly declared provisional, they were rapidly adopted by the Captive Breeding Specialist Group of IUCN and widely deployed in its joint workshops (with taxon-specific groups) to develop Conservation Action and Management Plans (CAMPs) for particular families. This has meant that several such CAMPs for birds, on (e.g.) penguins, waterfowl, Galliformes, parrots and pigeons, have taken place using this prototype system, and their results are in some cases about to be published. We have sought to achieve consistency between these documents and ours, particularly as our work, extending into August 1994, has produced important updated status assessments of many species that were the subject of CAMPs. However, we cannot guarantee precise alignment of judgements.

Mace and Lande (1991) was replaced by Mace *et al.* (1992), which was in turn upgraded by the proposals that went before the IUCN General Assembly in January 1994 and which are summarized in Collar and Stattersfield (1994); and these were themselves refined (basically through the absorption of the problematic 'Susceptible' category into 'Vulnerable') in a final review made by G. M. Mace for IUCN's Species Survival Commission in late May 1994. Our categorizations and codings make use of this last version of the proposals (Mace and Stuart 1994). The definitions of the categories are given in Box 1 and their relationship to the criteria is shown in Figure 2, with their relationship to one another in Figure 3; the criteria and codings for the threatened categories are summarized in Table 1, with rather more detail given in Tables 2–5. We must emphasize, however, the importance of referring to the original document (Mace and Stuart 1994), as it

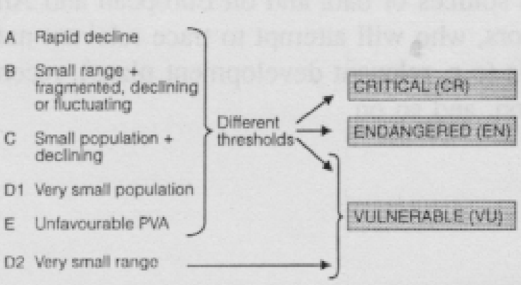

Figure 2. Relationship of criteria to threatened categories. The categories are decided by different thresholds in five main criteria, with Vulnerable additionally being decided by a range-size stand-alone.

Box 1. Definitions of proposed IUCN categories (as given in Mace and Stuart 1994).

EXTINCT (EX) A taxon is Extinct when there is no reasonable doubt that its last individual has died.

EXTINCT IN THE WILD (EW) A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity, or as a naturalized population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range, have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR) A taxon is Critically Endangered[1] when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined in any of the criteria (A–E)[2].

ENDANGERED (EN) A taxon is Endangered when it is not Critical but is facing a very high risk of extinction in the wild in the near future, as defined in any of the criteria (A–E)[2].

VULNERABLE (VU) A taxon is Vulnerable when it is not Critical or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined in any of the criteria (A–E)[2].

CONSERVATION DEPENDENT (CD) Taxa which do not currently qualify as Critical, Endangered or Vulnerable may be classified as Conservation Dependent. To be considered Conservation Dependent, a taxon must be the focus of a continuing taxon-specific or habitat-specific conservation programme which directly affects the taxon in question. The cessation of this conservation programme would result in the taxon qualifying for one of the threatened categories above.

LOW RISK (LR) A taxon is Low Risk when it has been evaluated and does not qualify for any of the categories Critical, Endangered, Vulnerable, Conservation Dependent or Data Deficient. It is clear that a range of forms will be included in this category, including: (i) those that are close to qualifying for the threatened categories[3], (ii) those that are of less concern, and (iii) those that are presently abundant and unlikely to face extinction in the foreseeable future. It may be appropriate to indicate into which of these three classes taxa in Low Risk seem to fall. It is especially recommended to indicate an appropriate interval, or circumstance, before re-evaluation is necessary for taxa in the Low Risk class, especially for those indicated in (i) above.

DATA DEFICIENT (DD) A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. DD is therefore not a category of threat or Low Risk. Listing of taxa in this category indicates that more information is required. Listing a taxon as DD acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and threatened status. If the range of a taxon is suspected to be relatively circumscribed, if a considerable period of time has elapsed since the last record of a taxon, or if there are reasonable chances of unreported surveys in which the taxon has not been found, or that habitat loss has had an unfavourable impact, threatened status may well be justified.

NOT EVALUATED (NE) A taxon is Not Evaluated when it has not yet been assessed against the criteria.

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[1] 'Critically Endangered' is the formal term under consideration; it is referred to throughout this book as 'Critical'.

[2] See Tables 1–5.

[3] This is the distinction which in this book bears the title 'Near-threatened'.

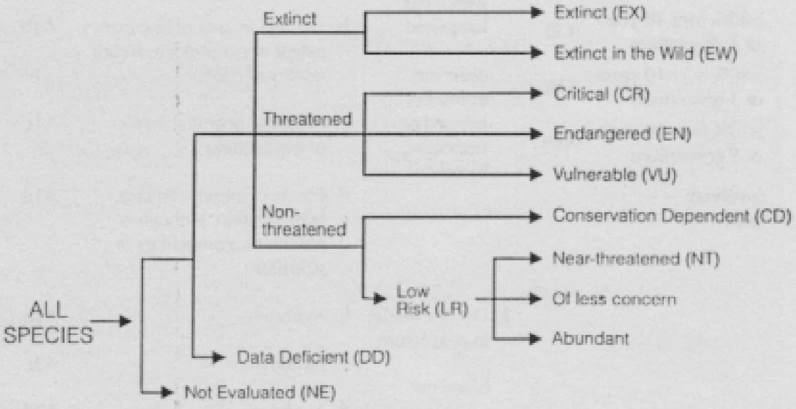

Figure 3. Relationships between the IUCN categories. The dendrogram shows the path down which a species travels to arrive at a particular categorization. The line-up of categories on the right reflects the way in which the new system attempts to rank species in categories that are almost, but not entirely, nested.

Table 1. The new IUCN threatened category thresholds at a glance. 'Extent of occurrence' and 'area of occupancy' are defined in the caption to Table 3.

Criteria	Main numerical thresholds		
	Critical	**Endangered**	**Vulnerable**
A RAPID DECLINE	>80% over 10 years or 3 generations	>50% over 10 years or 3 generations	>50% over 20 years or 5 generations
B SMALL RANGE **fragmented, declining or fluctuating**	Extent of occurrence <100 km² or area of occupancy <10 km²	Extent of occurrence <5,000 km² or area of occupancy <500 km²	Extent of occurrence <20,000 km² or area of occupancy <2,000 km²
C SMALL POPULATION **declining**	<250 mature individuals	<2,500 mature individuals	<10,000 mature individuals
D1 VERY SMALL POPULATION	<50 mature individuals	<250 mature individuals	<1,000 mature individuals
D2 VERY SMALL RANGE	—	—	<100 km² or <5 locations
E UNFAVOURABLE PVA	Probability of extinction >50% within 5 years	Probability of extinction >20% within 20 years	Probability of extinction >10% within 100 years

contains many important qualifying remarks and points of clarification that cannot be reproduced in this outline of the system.

Our only departure from the system is to retain (from previous BirdLife RDBs) the unofficial category of 'Near-threatened' which, although not used as such in the newest proposals, covers what those proposals refer to as 'Low Risk (type i)' taxa (see Box 1). It should be noted that in the case of Asia the Near-threatened list is disproportionately large, reflecting our wish to establish a comprehensive list of candidates for evaluation in the forthcoming *Threatened birds of Asia*. Moreover, the category Extinct has been used here only for species that had been included as possibly extant in the first *Birds to watch* but which we now feel are more appropriately placed apart from the main list, plus a few species that, since 1988, are thought to have become extinct.

PROBLEMS IN THE APPLICATION OF THE NEW CRITERIA

For the most part we have found it relatively straightforward to apply the new criteria, so our judgement is that they appear to work well with birds (further commentary on this is provided in the next chapter). Here we simply wish to outline certain problems that we encountered when applying them, and in some cases the decisions we took to overcome these difficulties.

Table 2. Criteria for the IUCN threatened categories: species undergoing rapid decline. 'Extent of occurrence' and 'area of occupancy' are defined in the caption to Table 3.

Rapid decline

Main criteria	Sub-criteria	Qualifiers	Codes
A. Decline of: >80% over 10 years or 3 generations **(CR)** >50% over 10 years or 3 generations **(EN)** >50% over 20 years or 5 generations **(VU)** involving *either*:	**1.** Decline which has happened observed, estimated, inferred or suspected, based on:	**a.** Direct observation	**A1a**
		b. Decline in area of occupancy, extent of occurrence, and/or quality of habitat	**A1b**
		c. Actual or potential levels of exploitation	**A1c**
		d. Effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites	**A1d**
	2. Decline likely in near future based on:	**b.** As above	**A2b**
		c. As above	**A2c**
		d. As above	**A2d**

Small range, plus any two of: fragmented, declining, fluctuating

Main criteria	Sub-criteria	Qualifiers	Codes
B. Extent of occurrence estimated: <100 km^2 (**CR**) <5,000 km^2 (**EN**) <20,000 km^2 (**VU**) *or* Area of occupancy estimated: <10 km^2 (**CR**) <500 km^2 (**EN**) <2,000 km^2 (**VU**) in *either* case with *any two of:*	**1.** Severe fragmentation *or* At 1 location (**CR**) <5 locations (**EN**) <10 locations (**VU**)	None	**B1**
	2. Continuing decline observed, inferred or projected in any of:	**a.** Extent of occurrence	**B2a**
		b. Area of occupancy	**B2b**
		c. Area, extent and/or quality of habitat	**B2c**
		d. Number of locations or subpopulations	**B2d**
		e. Number of mature individuals	**B2e**
	3. Extreme fluctuations in any of:	**a.** Extent of occurrence	**B3a**
		b. Area of occupancy	**B3b**
		c. Number of locations or subpopulations	**B3c**
		d. Number of mature individuals	**B3d**

Table 3. Criteria for the IUCN threatened categories: species with a small range and declining. 'Extent of occurrence' is the area contained within the shortest continuous imaginary boundary which encompasses all known, inferred or projected sites of present occurrence. 'Area of occupancy' is the area within the extent of occurrence which is occupied by a taxon (this measure is often applicable to species with highly specific habitats).

Two points to emphasize are that the guidelines to the new criteria insist on the use of the *precautionary principle*, and the criteria themselves explicitly require the use of numbers of *mature individuals*, when assessing a species for categorization. Any apparently inappropriate listing of criteria, in relation to the range or level of figures we cite, will in most cases be attributable to these two latent factors.

The precautionary principle is the arbiter in borderline cases, chiefly between threatened and non-threatened status. It simply requires the use of the lowest figures on range or population and of the

Small population and declining

Main criteria	Sub-criteria	Qualifiers	Codes
C. Population: <250 (**CR**) <2,500 (**EN**) <10,000 (**VU**) mature individuals and *either:*	**1.** Continuing decline >25% within 3 years or 1 generation (**CR**) >20% within 5 years or 2 generations (**EN**) >20% within 10 years or 3 generations (**VU**)	None	**C1**
	2. Continuing decline in numbers of mature individuals *and* population structure observed, inferred or projected in form of *either:*	**a.** Severe fragmentation no population >50 (**CR**) >250 (**EN**) >1,000 (**VU**) mature individuals	**C2a**
		b. All breeding individuals in single subpopulation	**C2b**

Table 4. Criteria for the IUCN threatened categories: species with a small population and declining.

Table 5. Criteria for the IUCN threatened categories: species with a very small population and/or a very small range.

Very small or restricted population

Main criteria	Sub-criteria	Qualifiers	Codes
D. Population:	None	None	
<50 (CR)			D1
<250 (EN)			D1
<1,000 (VU) mature individuals			D1
and/or			
Area of occupancy <100 km^2			D2
or			
at <5 locations (VU only)			

worst circumstance in terms of decline and threats that can *reasonably* be accepted. It therefore disallows 'worst-case scenarios', but urges caution (what one might call responsible pessimism) in accordance with the evidence.

The number of mature individuals is regarded as a better guide to the conservation status of a species than is a simple total of all individuals (in the case of many invertebrates and fish the importance of this distinction is much easier to appreciate). In many cases where a species has qualified under the C criterion (<10,000 and declining) we acknowledge that the total population may be several thousand higher than 10,000, but with immature birds making up the difference.

A further point to register is the difficulty surrounding the concepts of 'location' and '(sub)-population'. The guidelines for the new criteria attempt definitions (Box 2), but these are by no means comprehensive and probably never can be. The problem affects many of the criteria and technically destabilizes them.

Box 2. Definitions of 'Location', 'Population' and 'Subpopulation' in the proposed IUCN criteria.

Location A geographically or ecologically distinct area in which a single event (e.g. pollution) will soon affect all individuals of the taxon present. A location usually, but not always, contains all or part of a subpopulation of the taxon, and is typically a small proportion of the taxon's total distribution.

Population The total number of individuals of the taxon.

Subpopulation Geographically or otherwise distinct groups in the population between which there is little exchange (typically one successful migrant individual or gamete per year or less).

In the following paragraphs we describe various difficulties (some of which are very closely related), and in some cases how we have responded to them. While we have attempted to group them in a sequence that reflects this relatedness, and while some may be more important than others, we have given each a separate heading for the sake of clarity.

Data Deficient, inference and appropriate categorization

Despite the intended shift in the new criteria towards greater objectivity and accountability, the classification of species for which information is sparse remains largely intractable and hence liable to great variation between users of the system. In the guidelines to the criteria, emphasis is laid on the importance of attempting to classify poorly known species, and on allowing them threatened status (on the precautionary principle) if there are any signs from which this could be inferred. The category Data Deficient exists to accommodate only those species which cannot reasonably be assessed from the assembled evidence (see pp. 15 and 215). Typical Data Deficient species are known from one or very few specimens or sites within a habitat that remains largely intact and where no other threats (such as introduced predators) are expected; many are highly cryptic (the list includes nine nightbirds and four rails). However, when long-term absence of a species combines with suspected habitat loss, it is more or less obligatory to assign threatened status, although the role played by assumption is still enormous: Archer's Lark *Heteromirafra archeri* (Endangered, being the chosen precautionary compromise between the plain possibilities that it might be extinct and that it might conceivably prove locally common) is an example. Clearly there is considerable scope for variation in the categorization of such species, which in other reviewers' hands might, with some justification, appear as anything from Extinct to Data Deficient.

Suitability and use of Conservation Dependent

Conservation Dependent exists for species that would very rapidly qualify as threatened if they were not under management; it is not for species which are under management but have already met the criteria (these are threatened species, irrespective of their management). It has been applied very infrequently (11 species in total: p. 213), partly because so few species are genuinely under conservation management, and partly because so little conservation management can confidently be judged effective. This is especially true for protected areas which, despite covering most of a species' range, may suffer external pressure, or be managed inappropriately, or pro-

CANDIDATE LIST OF THREATENED SPECIES TAKEN FROM *BIRDS TO WATCH 2: THE WORLD LIST OF THREATENED BIRDS*

Dalmatian Pelican *Pelecanus crispus* breeds colonially within a highly fragmented range (between 30 and 50°N) from eastern Europe into east-central Asia (**Montenegro, Albania, Greece, Romania, Bulgaria, Russia, Ukraine, Azerbaijan, Armenia, Turkey, Iran, Turkmenistan, Uzbekistan, Kazakhstan, Mongolia and China**), the European populations dispersing in winter, while those north and east of the Black Sea migrate south to **Egypt, Lebanon, Syria, Iraq, Afghanistan, Pakistan, India, Bangladesh** and **Hong Kong** (records of vagrancy from up to 14 countries) (del Hoyo *et al.* 1992, Inskipp and Collins 1993); drainage of wetlands throughout the range (compounded by shooting, persecution by fishermen who regard the species as a competitor, collision with power lines, pesticides and disturbance at colonies) has caused a massive decline in numbers, such that, where once millions were reported from Romania alone in the past century, the total global breeding population is now 3,200–4,300 pairs (most in Kazakhstan; maximum 1,200 pairs in Europe west of the Urals) and, since many existing or proposed conservation measures cannot be assured, the prospect of further decline is real (King 1978-1979, Tucker *et al.* 1994, Heredia in prep., A. J. Crivelli verbally 1994). **Vulnerable:** C2a.

Spot-billed Pelican *Pelecanus philippensis* was once widespread in Asia, breeding in colonies near natural lakes, reservoirs and in tree clumps in villages and feeding in shallow wetlands, but has suffered a considerable decline in the past few decades, probably owing to the combination of human disturbance, hunting, destruction of nesting and roosting/loafing areas, declines in fish availability and increased pesticide usage, such that the total world population is now estimated at 11,500 individuals (not necessarily mature); breeding is only currently confirmed in **India, Sri Lanka** and **Cambodia**, suspected in Sumatra, **Indonesia** (recent sightings throughout the year including juveniles, but may now be down to only a few birds: AWB Indonesia, D. A. Holmes *in litt.* 1994), there are recent non-breeding records from **Bangladesh, Nepal**, the **Philippines, Thailand** and **Vietnam**, and its status is poorly known in **China** (largely because of confusion with Dalmatian Pelican *P. crispus*), **Laos** (formerly present, but not observed during recent surveys: Salter 1993) and **Myanmar** (millions of birds until the early 1900s) (Crivelli and Schreiber 1984, Johnson *et al.* 1993; see van Marle and Voous 1988, Harvey 1990, Inskipp and Inskipp 1991, Boonsong and Round 1991, Lu 1993, MacKinnon and Phillipps 1993, *Oriental Bird Club Bull.* 18 [1993]: 67-70, Rose and Scott 1994). **Vulnerable:** A1a,b,c,d; C1.

White-bellied Heron *Ardea insignis* is known historically from the foothills of the eastern Himalayas from **Nepal**, through north-east **India** and **Bhutan** to northern **Myanmar** (and probably south-east Tibet, China: Meyer de Schauensee 1984), and south to the hills of eastern **Bangladesh** and western and southern Myanmar; it is found along rivers in forest and in wetlands, and is apparently rare and seen singly or in small parties of four or five (Ali and Ripley 1987). It has not been recorded in Nepal this century (Inskipp and Inskipp 1991) and the few recent records are from north-east India (Choudhury 1992, M. Jäderblad *in litt.* 1994), Bangladesh (Thompson *et al.* 1993) and Bhutan (Inskipp and Inskipp 1993a,b). It is presumably threatened by habitat destruction and fragmentation (see Collins *et al.* 1991). **Endangered:** A1a,b; C1; C2a.

Oriental Stork *Ciconia boyciana* breeds in river valleys, wet meadows and marshes with scattered clumps of trees in the Amur and Ussuri River regions of south-east Siberia, **Russia** (total of 700–800 pairs found in the mid-1970s), and Heilongjiang, Jilin and eastern Inner Mongolia, north-east **China**, but is extinct as a breeding bird in Japan (by the turn of the century: King 1978-1979), South Korea (where the only post-war breeding record was in 1971: Gore and Won 1971) and North Korea (Sonobe and Izawa 1987), countries where it was formerly common; the main wintering grounds are the wetlands in the lower Chang Jiang (= Yangtze) valley, but there have also been large winter counts in **Hong Kong** since 1990, and smaller numbers occur in winter (and on passage) elsewhere in China, in **Japan, South Korea, North Korea** and **Taiwan**, and at least formerly in north-east **India, Bangladesh** and **Myanmar** (Chan 1991, Hancock *et al.* 1992; see Scott 1989). The world population has recently been estimated at 2,500 individuals (Rose and Scott 1994), although this is perhaps too low as 2,729 were counted on autumn passage in 1986 at Beihaihe, eastern China (Williams *et al.* 1992). Threats include hunting and human disturbance, habitat destruction (draining of wetlands for agriculture and disease control, burning and cutting of nesting trees) and pesticides and other pollution (Chan 1991, Hancock *et al.* 1992, Lu 1993), while the proposed Three Gorges Dam Project would alter seasonal water levels of the Chang Jiang River and would put many of the major wintering grounds at risk (see Zhu *et al.* 1987). **Endangered:** A2b; C1.

Lesser Adjutant *Leptoptilos javanicus* has an extensive range in South and South-East Asia, where it is found in wetlands, pools in forest and rice-paddies, sometimes moving to agricultural fields and grasslands, and particularly in South-East Asia and the Greater Sundas it is a bird of mangroves and coastal mudflats, but its numbers appear to be much reduced throughout and it is extinct as a breeding bird in several range states, as a result of habitat loss (both the cutting of nesting trees and the draining of feeding areas), hunting and human disturbance (Luthin 1987, Hancock *et al.* 1992); the total world population is estimated to be below 10,000 and still declining (Rose and Scott 1994). Recent reports are from **Sri Lanka** (c.100 pairs: Hancock *et al.* 1992), **India** (135 nests located by a survey in Assam, and also nesting in Madhya Pradesh and the Sundarbans: Hancock *et al.* 1992), **Nepal** (breeds in two areas: Inskipp and Inskipp

1991), **Bangladesh** (widespread but fast disappearing: Collar and Andrew 1988), **Laos** (small numbers recorded recently in the south: Salter 1993, Duckworth *et al.* 1993), **Cambodia** (quite numerous and widespread throughout the country, with evidence of breeding from at least three sites: T. Mundkur *in litt.* 1994), **Vietnam** (small numbers may breed in one or two protected areas, but not confirmed: J. C. Eames *in litt.* 1994), **Thailand** (rare resident and occasional visitor: Boonsong and Round 1991), **Malaysia** (national total of perhaps 250-300, of mostly old birds, with no proven breeding success in the peninsula for a long time: D. R. Wells *in litt.* 1994), **Brunei** (Mann 1987) and **Indonesia** (under 2,000, the majority nesting in southern and eastern Sumatra with one colony known in Kalimantan and one presumed present on Bali, and occurrence on Java: Silvius and Verheugt 1989, Galdikas and King 1989, Andrew 1992, S. van Balen *in litt.* 1994), with no recent information from southern **China** or **Myanmar**. **Vulnerable**: C1.

Greater Adjutant *Leptoptilos dubius* formerly ranged widely in northern **India**, Pakistan (vagrant only: Roberts 1991), **Nepal**, **Bangladesh**, **Myanmar** (large colonies once existed, but now believed extinct, possibly as a result of the cutting of nest trees: Hancock *et al.* 1992), **Thailand**, southern **Laos**, **Cambodia** and **Vietnam**, and was a common scavenger in the city of Calcutta and elsewhere (King *et al.* 1975, Ali and Ripley 1987). However, the only recent breeding records are from north-east India and Cambodia: in India, up to 126 nests have been located in six colonies in the 1990s around the floodplain of the Brahmaputra River in Assam, and non-breeding counts of up to 455 individuals have been made, the birds nesting in groups of trees and feeding mainly in wetlands, but seasonally moving into towns to scavenge, the main threats being the cutting of nesting trees and some hunting (Bhattacharjee 1993); in Cambodia, a population of less than 100 birds is estimated at Tonle Sap and one or two other localities, where they nest in freshwater flooded forest, and feed on inland and coastal marshes and intertidal mudflats, the main threat being considered the taking of eggs and chicks for food (Mundkur 1994). Recent records of small numbers in Nepal (Inskipp and Inskipp 1991), Thailand (Boonsong and Round 1991), Vietnam (J. C. Eames *in litt.* 1994) and an unconfirmed sighting from southern Laos (Salter 1993) presumably involve birds from these two populations. **Endangered**: A1b,c; C1; C2a; D1.

White-headed Duck *Oxyura leucocephala* breeds on small, shallow, brackish or freshwater lakes, marshes and lagoons (often endorreic, i.e. with a closed-basin hydrology) with dense fringing vegetation in arid regions in **Spain**, **Algeria**, **Tunisia**, **Romania** (now irregularly), **Turkey** (in small numbers, but Burdur Gölü hosts the largest known wintering population: 11,000 birds), **Iran**, **Afghanistan**, **Uzbekistan**, **Kazakhstan** (major breeding country) and **Russia** (with breeding records also from **Mongolia** and **China**, where current status is unclear), having become extinct as a breeding bird this century in Morocco, France (Corsica only), Italy (also Sardinia and probably Sicily), Hungary, Serbia, Albania, Israel and Azerbaijan, although still dispersing on passage and in winter to similar (though sometimes entirely saline) habitats in the countries above plus **Morocco**, **Italy**, **Albania**, **Bulgaria**, **Greece**, **Cyprus**, **Israel**, **Egypt**, **Syria**, **Saudi Arabia**, **Iraq**, **Azerbaijan**, **Turkmenistan**, **Tajikistan**, **Pakistan** and **India** (records of vagrancy from up to 13 countries, and indeed in some of those above its status has dwindled towards that of vagrant only); although the total population may currently be stable at around 18,000–19,000 birds, a serious decline, attributable to extensive drainage, pollution, water management schemes and hunting, has been in progress until recently (e.g. 50,000 birds wintering in the Caspian Sea in the 1930s, no more than 1,000 since the 1960s), and hybridization with the escaped, invasive Ruddy Duck *O. jamaicensis*, which is already affecting the outpost Spanish population, may become irreversible within the next few years (Collar and Andrew 1988, Anstey 1989, Anstey and Moser 1990, Green and Anstey 1992, del Hoyo *et al.* 1992, Gantlett 1993, Inskipp and Collins 1993, Rose and Scott 1994, Tucker *et al.* 1994, Heredia in prep.). **Vulnerable**: A2d.

Lesser White-fronted Goose *Anser erythropus* breeds in lightly wooded tundra, on hills and by lakes south of the Arctic Circle in northern **Norway**, **Sweden**, **Finland** and predominantly **Russia**, wintering in (or migrating through) steppes and dry farmland in **Latvia**, **Albania**, **Serbia**, **Hungary**, **Romania**, **Bulgaria**, **Greece**, **Turkey**, **Iraq**, **Iran**, **Azerbaijan**, **Turkmenistan**, **Pakistan**, **India**, **China** and **Japan** (records of vagrancy in up to 12 countries); a drastic decline throughout its range, attributed with only partial confidence to loss of feeding habitat and hunting in the winter quarters, has seen the Fennoscandian population dwindle to around 50 pairs, migrants in Hungary drop from up to 120,000 before 1950 to a few thousand by around 1980, and the Russian numbers, albeit with conflicting evidence, fall precipitously (Collar and Andrew 1988, del Hoyo *et al.* 1992, Inskipp and Collins 1993, Rose and Scott 1994, Tucker *et al.* 1994, Heredia in prep.). **Vulnerable**: A1a,b,c.

White-winged Duck *Cairina scutulata* has a large range, extending from north-east **India** to Sumatra and Java, **Indonesia**, with recent records from India (five districts in Assam and three in Arunachal Pradesh), **Bangladesh** (Chittagong Hill Tracts), **Myanmar** (close to the border with Thailand), **Laos** (one unconfirmed sighting in Xe Piane protected area in 1992, and three seen in the Nakal Plateau/Nam Theun protected area in 1994: Duckworth *et al.* 1993, T. D. Evans and R. J. Timmins verbally 1994), **Cambodia** (not observed during surveys in 1994, but reported to occur at Tonle Sap by local people: T. Mundkur *in litt.* 1994), **Vietnam** (Nam Cat Tien National Park and Ho Ke Go: J. C. Eames *in litt.* 1994), **Thailand** (south-west, north-east, peninsular and possibly south-east), Peninsular **Malaysia** (possible record in Johore, but no confirmed records this century) and Indonesia (six of the eight provinces on Sumatra, with a population of 30 individuals in Way Kambas National Park: Rudyanto in press), although large parts of its range have recently been inaccessible to ornithologists, notably in Myanmar (Green 1992, 1993). It occurs in areas with moist tropical forest (essential for nesting and roosting) holding or providing access to stagnant or slow-moving wetlands (essential for feeding), usually below 200 m but locally up to 900 m or higher; there has clearly been a major decline in numbers during this century (and it may be extinct in Malaysia and Java), and the known population is only 336 individuals (although this is very much a minimum figure); the main reason for the decline is deforestation of lowlands, reducing the total area of habitat and fragmenting populations, but other threats include inappropriate forest management, drainage of wetlands, hunting, human disturbance, probably pesticides and pollution (Green 1992, 1993), and possibly the spread of disease from escaped captive birds (R. H. Raza *in litt.* 1994). **Endangered:** A1b,c,d; **C1; C2a;** D1.

Marbled Teal *Marmaronetta angustirostris* breeds on shallow eutrophic lakes with fringing cover in **Spain, Senegal, Morocco, Algeria, Tunisia, Egypt, Israel, Turkey, Iraq, Iran, Armenia, Azerbaijan, Georgia, Russia, Kazakhstan, Uzbekistan, Turkmenistan, Afghanistan, Pakistan, Tajikistan** and **China** (Kekamkyi Lake), with wintering areas poorly understood but extending from the countries above to include **Mali, Chad** and **India**, the preferred habitat then being recently flooded seasonal wetlands; hunting, pollution and above all drainage are blamed for the extreme fragmentation of range and massive decline in numbers this century (total population currently put at 33,000), the single most serious current threat perhaps being the conversion of the southern Iraq marshes where many thousands of pairs are suspected of breeding (Collar and Andrew 1988, Scott 1989, del Hoyo *et al.* 1992, Green 1993, Inskipp and Collins 1993, Rose and Scott 1994, Tucker *et al.* 1994, Heredia in prep.). **Vulnerable:** A2b.

Pink-headed Duck *Rhodonessa caryophyllacea* was formerly a local species found on wet ground and pools in the forests and grass jungles of north-east **India** (Ripley 1982) and northern **Myanmar** (Smythies 1986), recorded in central **Nepal** last century, and last sighted at Bihar, India, in June 1935 (Ali and Ripley 1987, Inskipp and Inskipp 1991). It was regarded as extinct by King (1978-1979), but there are reports of sightings by hunters in northern Myanmar (e.g. U Tun Yin *in litt.* to W. B. King 1979) and its extinction cannot be confirmed until this part of its former range has been surveyed. The reasons for its decline are not fully understood, but the conversion of its habitat to agricultural land and hunting are likely causes (Ali 1978). **Critical:** D1.

Ferruginous Duck *Aythya nyroca* breeds in shallow pools and marshes with abundant emergent and shoreline vegetation in **Morocco, Spain, Germany, Austria, Italy, Albania, Slovenia, Croatia, Serbia, Bosnia-Herzegovina, Macedonia, Montenegro, Czech Republic, Slovakia, Hungary, Bulgaria, Romania, Greece, Moldova, Poland, Lithuania, Latvia, Belarus, Russia, Ukraine, Georgia, Azerbaijan, Armenia, Turkey, Israel, Saudi Arabia, Iran, Turkmenistan, Uzbekistan, Kazakhstan, Tajikistan, Afghanistan, India, Mongolia** and **China**, migrating through or wintering (often on larger lakes and lagoons and coastal marshes) in **France, Belgium, Netherlands, Switzerland, Malta, Libya, Tunisia, Algeria, Senegal, Mali, Niger, Nigeria, Chad, Cameroon, Central African Republic, Sudan, Ethiopia, Egypt, Cyprus, Lebanon, Jordan, Yemen, Oman, United Arab Emirates, Iraq, Pakistan, Nepal, Bhutan, Bangladesh, Myanmar, Thailand** and **Vietnam** (records of vagrancy from at least 23 countries); the various populations have apparently undergone massive declines (e.g. from 140,000 pairs in the former U.S.S.R. in 1970 to 5,200 pairs in 1984), attributed to wetland drainage compounded by high hunting pressure, so that the global total is now put at 75,000 birds (del Hoyo *et al.* 1992, Inskipp and Collins 1993, Rose and Scott 1994, Tucker *et al.* 1994). **Vulnerable:** A1a,b,c.

Baer's Pochard *Aythya baeri* breeds in marshes and lakes with emergent vegetation in eastern **Russia** (for details of distribution see Nechaev and Gluschenko 1993), north-east **China** (Cheng 1987) and probably North Korea (Inskipp and Collins 1993), and occurs on passage or winters in wetlands in **North Korea, South Korea, Japan** (Brazil 1991), eastern China, **Taiwan** (Wang *et al.* 1991), **Hong Kong (to U.K.)** (Chalmers 1986), north-east **India** (Ali and Ripley 1987), **Nepal** (Inskipp and Inskipp 1991), **Bangladesh** (a total of 1,712 counted at four localities in early 1993: Thompson *et al.* 1993), **Myanmar, Thailand** (uncommon: Boonsong and Round 1991) and northern **Vietnam** (J. C. Eames *in litt.* 1994; see Scott 1989), with a total world population of possibly below 10,000 birds (Rose and Scott 1994). Historical records of passage migrants from Beidaihe in eastern China suggest that a substantial decline may have taken place early this century, as it was described as "extremely abundant" between 1910 and 1917, but has only been recorded in small numbers since (Williams *et al.* 1992), there has been a sharp decline in Russia in recent years linked with drainage for rice cultivation, increased disturbance and illegal hunting (Kolosov 1983, Nechaev and Gluschenko 1993), and a locality known to regularly support large wintering concentrations, Lake Boraphet in Thailand (maximum count of 426), is currently threatened (*Oriental Bird Club Bull.* 16 [1992]: 11). **Vulnerable:** A1a,b; C1.

Pallas's Sea-eagle *Haliaeetus leucoryphus* occurs from **Kazakhstan, Tajikistan** and **Uzbekistan** east through **Mongolia** to **China**, south to northern **India, Afghanistan** (non-breeding visitor), **Pakistan, Nepal** (possibly breeds, chiefly a winter visitor: Inskipp and Inskipp 1991), **Bhutan, Bangladesh** and **Myanmar** (and it has occurred as a vagrant in several countries in Europe, the Middle East and South-East Asia) (Inskipp and Collins 1993), where it breeds in open semi-arid areas, both in the plains and uplands, usually near river valleys or lakes (Dement'ev *et al.* 1966). There is little recent published information on its status in much of its range, but it appears to be thinly distributed and there is evidence for a decline in numbers in some range states (Collar and Andrew 1988), although it remains locally common in parts of Bangladesh (S. M. A. Rashid *in litt.* 1994) and north-east India (M. Jäderblad *in litt.* 1994). It is presumably vulnerable to wetland destruction and human disturbance, and pollution is believed to be the main reason for its decline in parts of India (A. R. Rahmani *in litt.* 1994). **Vulnerable**: C1; C2b.

Greater Spotted Eagle *Aquila clanga* occupies a massive but highly fragmented breeding range extending through lowland primary forests (always near water) from **Finland**, **Latvia**, **Lithuania** (extinct), **Poland**, **Belarus**, **Moldova** and **Romania** into **Russia**, **Ukraine**, **Iran**, **Pakistan**, **India**, **Kazakhstan**, **China** and **Mongolia**, with passage or wintering birds occurring regularly (but among many of the following in tiny numbers) in **Morocco** (not simply a vagrant: M. Dakki *per* G. Allport), **France**, **Italy**, **Germany**, **Sweden**, **Czech Republic**, **Slovakia**, **Hungary**, **Bulgaria**, **Greece**, **Turkey**, **Lebanon**, **Israel**, **Jordan**, **Egypt**, **Sudan**, **Ethiopia**, **Kenya**, **Yemen**, **Oman**, **United Arab Emirates**, **Saudi Arabia**, **Kuwait**, **Iraq**, **Afghanistan**, **Nepal**, **Bangladesh**, **Myanmar**, **Thailand**, **Cambodia**, **Laos**, **Vietnam**, Peninsular **Malaysia**, **Singapore** and **Hong Kong (to U.K.)** (records of vagrancy in over 20 countries); it occurs at extremely low densities (maximum population in Europe west of the Urals is 900 pairs), and is declining at least in the western half of its range in response to disturbance and destruction of habitat (Glutz *et al.* 1971, Inskipp and Collins 1993, Tucker *et al.* 1994), but trends are generally difficult to judge because of past and continuing problems with field identification. **Vulnerable**: C2a.

Imperial Eagle *Aquila heliaca* occupies a massive but highly fragmented breeding range extending through the wooded steppes of **Slovakia**, **Croatia**, **Serbia**, **Macedonia**, **Hungary**, **Bulgaria**, **Romania**, **Greece**, **Cyprus**, **Turkey**, **Iran**, **Moldova**, **Ukraine**, **Russia**, **Georgia**, **Azerbaijan**, **Turkmenistan**, **Uzbekistan**, **Kazakhstan** and **China**, with passage or wintering birds from the eastern populations occurring regularly in **Syria**, **Lebanon**, **Israel**, **Jordan**, **Egypt**, **Sudan**, **Ethiopia**, **Djibouti**, **Yemen**, **Oman**, **United Arab Emirates**, **Saudi Arabia**, **Kuwait**, **Iraq**, **Afghanistan**, **Pakistan**, **India**, **Bangladesh**, **Laos**, **Vietnam** and **Hong Kong (to U.K.)** (records of vagrancy from up to 23 countries); there has been a rapid decline in Europe since 1950 (where the current total lies between 320 and 570 pairs) and the world population is now down to a few thousand pairs, as a result of persecution (e.g. in Syria), disturbance while breeding, poisoning (targeted at canids), zoo collecting, habitat loss (and the attendant loss of prey species), agricultural pesticides, felling of nest trees, and collision with or electrocution by power-lines (Glutz *et al.* 1971, Inskipp and Collins 1993, Tucker *et al.* 1994, del Hoyo in press). **Vulnerable**: C2a.

Lesser Kestrel *Falco naumanni* breeds colonially in buildings, earth cliffs, quarries, tree holes, rock piles in (wooded) grassland areas of the southern Palearctic in **Morocco**, **Algeria**, **Tunisia**, **Libya**, **Portugal**, **Spain**, **Gibraltar (to U.K.)**, **France**, **Italy**, **Slovenia**, **Croatia**, **Serbia**, **Macedonia**, **Albania**, **Bulgaria**, **Romania**, **Greece**, **Turkey**, **Syria**, **Israel**, **Jordan**, **Saudi Arabia**, **Iran**, **Armenia**, **Azerbaijan**, **Georgia**, **Russia**, **Moldova**, **Ukraine**, **Afghanistan**, **Turkmenistan**, **Uzbekistan**, **Tajikistan**, **Kyrgyzstan**, **Kazakhstan**, **China** and **Mongolia**, with passage birds occurring in **Malta**, **Cyprus**, **Egypt**, **Lebanon**, **Iraq**, **Kuwait**, **Qatar**, **United Arab Emirates**, **Oman** and **Yemen** (far eastern birds may fly across the Indian Ocean in autumn, overland in spring) spending the non-breeding period in the savannas, thornbush and open plains and farmland of Africa in **Mauritania**, **Senegal**, **Gambia**, **Guinea**, **Sierra Leone**, **Liberia**, **Mali**, **Ivory Coast**, **Benin**, **Burkina**, **Niger**, **Nigeria**, **Chad**, **Central African Republic**, **Sudan**, **Ethiopia**, **Eritrea**, **Djibouti**, **Somalia**, **Kenya**, **Tanzania**, **Uganda**, **Rwanda**, **Burundi**, **Zaïre**, **Gabon**, **Congo**, **Angola**, **Zambia**, **Malawi**, **Mozambique**, **Zimbabwe**, **Botswana**, **Namibia**, **South Africa** and **Lesotho**, and in similar habitat in Asia in **Pakistan**, **India**, **Maldives**, **Nepal**, **Bangladesh**, **Myanmar** and **Laos** (records of vagrancy – in some cases possibly representing inadequately documented regular occurrence – from up to 20 countries); serious declines have been observed throughout its European range (and reflected in observations in South Africa), with (e.g.) 100,000 pairs in Spain in 1950 falling to less than 5,000 in 1990, a trend attributed to agricultural intensification (including use of pesticides) and urbanization (and building renovation) in Europe, and a decline in pastoral farming in both Europe and Africa (Auburn 1988, Fanshawe 1989, Biber 1990, Aspinall 1993, Colahan 1993, Dowsett and Forbes-Watson 1993, Inskipp and Collins 1993, Negro and Hiraldo 1993, Nuttall 1993, Parr and Yarar 1993, Tucker *et al.* 1994, Heredia in prep.). **Vulnerable**: A1a,b,d.

Nicobar Scrubfowl *Megapodius nicobariensis* is now apparently restricted to the Nicobar Islands, **India**, where it is found in forest and secondary growth on all of the islands apart from Car Nicobar, although there is evidence that it occurred early this century on Little Andaman (India) and probably also Coco Island (Myanmar) in the Andaman Islands (R. W. R. J. Dekker *in litt.* 1993). In 1992, the population on Great Nicobar was estimated to exceed 2,000 birds (Dekker 1992), and a survey of eight islands in 1992–1993 (which did not cover the interiors of the islands and several small islands where it is reported to occur) estimated a minimum population of 6,946 individuals, including 3,422 on Great Nicobar; the species was found to be extinct on one small island, and to have declined in the Nancowry group as a result of the conversion of forest to coconut plantations, and evidence was found for further encroachment into forests, and localized hunting for food and egg collection, although introduced predators were not judged to be a problem (Sankaran 1993b). The forests on Great Nicobar are still almost pristine, but there are threats there from a proposed refuelling base for international shipping and road developments (Sankaran 1993a). **Vulnerable**: C1.

Swamp Francolin *Francolinus gularis* is confined to the Ganges and Brahmaputra river basins in western **Nepal**, **Bangladesh**, Uttar Pradesh, northern Bihar, West Bengal, Assam and Arunachal Pradesh in north-east **India**, where it occupies tall, wet grasslands and swamps in the lowlands below 200 m (Ali and Ripley 1987, Javed and Rahmani 1991, Singh in prep.). Its habitat is now highly fragmented, with recent reports from only 12 protected areas in northern India (ranging from 11 to 614 km²) and three in Nepal; it is locally common in these areas, and apparently commoner in a mosaic of slightly grazed grassland, marshland and sugarcane fields than in pure, dense wet grassland (A. R. Rahmani *in litt.* 1994), but not necessarily secure in all of them as management currently concentrates on protecting habitat for ungulates, and it is declining outside protected areas owing to habitat destruction and perhaps the effects of pesticide run-off (McGowan *et al.* in press). **Vulnerable:** A1b.

Manipur Bush-quail *Perdicula manipurensis* is found in wet, tall grassland and scrub, and sometimes swamps, in foothills to c.1,000 m in north-east **India**, where it is recorded from northern West Bengal, Assam, Nagaland, Manipur and Meghalaya, and **Bangladesh**; although formerly described as local but not very rare, there appear to be no recent published records (BirdLife BPD) and this species may have become much scarcer as a result of drainage and destruction of its habitat, and perhaps hunting (Ali and Ripley 1987, McGowan *et al.* in press). **Vulnerable:** C1; C2a.

Chestnut-breasted Partridge *Arborophila mandellii* is known from the eastern Himalayas, in **Bhutan**, Sikkim and Arunachal Pradesh, **India**, and south-east Tibet, **China**, where it has been found in evergreen forest from 350 m to 2,450 m, and possibly higher (Ali and Ripley 1987, Cheng 1987). There appear to be only a few, widely scattered historical records (BirdLife BPD), and the only recent reports are from two localities (and possibly a third: M. Katti *in litt.* 1993) in Arunachal Pradesh (Singh in prep., R. Kaul verbally 1994, R. H. Raza *in litt.* 1994) and possible records from Bhutan (T. P. Inskipp and C. Inskipp *in litt.* 1993). It is believed to be threatened by forest destruction and degradation, and hunting (McGowan *et al.* in press, A. R. Rahmani *in litt.* 1994). **Vulnerable:** C1; C2a.

Himalayan Quail *Ophrysia superciliosa* is known only from the western Himalayas in northern Uttar Pradesh, **India**, by a handful of specimens collected near Mussooree and Naini Tal in the nineteenth century, from long grass and scrub on steep hillsides between 1,650 and 2,100 m, and is presumed extinct (King 1978-1979, Ali and Ripley 1987), although there is a report of a more recent sighting (Savage 1988). Its known habitat requirements are similar to those of a more widespread western Himalayan endemic, the Cheer Pheasant *Catreus wallichii*, and the historical records of the Himalayan Quail perhaps merely reflect the presence of hill stations, so searches should be carried out over a wider area (Sankaran 1990, Kaul 1992). **Critical:** D1; D2.

Western Tragopan *Tragopan melanocephalus* is endemic to the western Himalayas, in northern **Pakistan** and north-west **India**, where it breeds in the dense undergrowth of undisturbed temperate zone coniferous and oak forest between 2,400 and 3,600 m, descending in winter to c.2,000 m (Ali and Ripley 1987). Habitat degradation resulting from excessive livestock grazing and fodder and firewood collection, together with timber harvesting and the subsequent conversion of land for agriculture, continue to reduce and fragment its range (Garson and McGowan in press). Populations still occur in the Neelum Valley, India and Pakistan (see Islam and Crawford 1985, 1986), the Chenab Valley east through the Ravi and Beas catchments to the eastern side of the Sutlej Valley, India, and the valleys adjoining the Indus River in north-west Pakistan, and it occurs in at least seven protected areas (Collar and Andrew 1988, Garson and McGowan in press; see Chaudhry 1993). The largest concentration of the species (currently estimated at 325 pairs: Bean *et al.* 1994) in the Palas Valley, Pakistan, is the focus of the BirdLife Himalayan Jungle Project (Duke 1994). **Vulnerable:** C1; C2a.

Blyth's Tragopan *Tragopan blythii* is known from the eastern Himalayas, in eastern **Bhutan**, Arunachal Pradesh, **India**, northern **Myanmar**, and south-east Tibet and north-west Yunnan in **China**, and the Naga and Chin Hills in Nagaland and Manipur, India and western Myanmar, where it is found in the undergrowth (especially bamboo) of dense evergreen forest at 1,800 to 3,300 m (Ali and Ripley 1987). The only recent records are of small numbers in Yunnan (Peng *et al.* 1980, Zheng and Zhang 1993) and eastern Arunachal Pradesh (R. Kaul *in litt.* 1994), but this paucity of information is probably largely a reflection of the inaccessibility of much of its range, and it is reported to be present by Forestry Department officials in Nagaland (in good numbers: R. Kaul *in litt.* 1994) and by local hunters in Manipur (Beaman 1991). It was, at least formerly, locally common in Myanmar (King 1978-1979), but habitat destruction and fragmentation and hunting are considered likely to be reducing its range and numbers (Garson and McGowan in press). **Vulnerable:** C1; C2a.

Sclater's Monal *Lophophorus sclateri* is found in the eastern Himalayas, in Arunachal Pradesh, **India**, northern **Myanmar** and south-east Tibet and western Yunnan, **China**, where it inhabits coniferous forest with bamboo understorey, subalpine rhododendron scrub and rocky, precipitous slopes from 3,000 to 4,000 m (down to 2,500 m in winter) (Meyer de Schauensee 1984, Ali and Ripley 1987, Cheng 1987, Garson and McGowan in press). There are recent records from several sites in Yunnan and Tibet, and from one locality in Arunachal Pradesh (but none from Myanmar), including the large Gaoligong Shan Nature Reserve in Yunnan, and it is locally common; in the Chinese part of its range localized forest loss and hunting are threats, and hunting for food and feathers (to make ornaments) also takes place in India (F. Q. He verbally 1993, Garson and McGowan in press, R. Kaul verbally 1994, R. H. Raza *in litt.* 1994). **Vulnerable:** C1; C2a.

Cheer Pheasant *Catreus wallichi* ranges through the western Himalayas from northern **Pakistan** and north-west **India** to central **Nepal**, where it occurs between 1,200 and 3,250 m in patchy hill grasslands dissected by scrub and wooded ravines, and locally in recently cleared areas with secondary growth, apparently having a strong affinity for early successional habitats, and is generally found in small populations in isolated pockets of suitable habitat; in India, it has been found at numerous sites in Himachal Pradesh, but appears to be rarer in Uttar Pradesh, and has populations in several protected areas, there are recent records from only a few localities in western Nepal, including two protected areas, and very few from Pakistan where it may be close to extinction (see Roberts 1991, *Oriental Bird Club Bull.* 16 [1992]: 14-15, Chaudhry 1993), and the main threats are hunting, habitat degradation and the conversion of land for agriculture; a reintroduction programme instigated in 1978 in the Margalla Hills, Pakistan, has so far failed to re-establish the species (Garson *et al.* 1992, Garson and McGowan in press). **Vulnerable:** C2a.

Hume's Pheasant *Syrmaticus humiae* is known from Mizoram, Manipur, Nagaland and eastern Arunachal Pradesh, **India**, **Myanmar**, north-west **Thailand** and Guangxi and Yunnan, **China**, where it occurs in broadleaf evergreen forest and mixed broadleaf and pine forest, and in adjacent clearings with grass and bracken, at 740 to 2,000 m, with recent records from over 20 sites in China and two in Thailand (including records within protected areas in both countries), but there is no current information from the core of its range in Myanmar and the only recent report from India is rumoured presence in two protected areas in Mizoram (R. K. Ramunujam *per* R. Kaul *in litt.* 1993); numbers have greatly diminished in China (and presumably elsewhere) because of habitat destruction and hunting (Ali and Ripley 1987, Liu *et al.* 1990, Zheng and Zhang 1993, P. J. Garson *in litt.* 1994, Garson and McGowan in press). **Vulnerable:** C1; C2a.

Siberian Crane *Grus leucogeranus* breeds in two (or perhaps three) discrete areas in Siberia, **Russia**, in extensive wetlands with many lakes in the tundra zone, each pair apparently requiring access to very long sections of lakeshore with floating turf to rear young successfully (Sorokin and Kotyukov 1987, Potapov 1992). Birds breeding in western Siberia winter in wetlands in **Iran**, where numbers have remained relatively stable at 10–11 since the discovery of this population 14 years ago, and at Bharatpur, **India** (arriving via **Afghanistan** and **Pakistan**), where they have declined from 125 in the 1960s to just six in winter 1991/1992, and no birds were reported to be present in 1993/1994 (Lall and Raman 1994; but see *Birding World* 7,5 [1994]: 212), perhaps because of hunting in Afghanistan (where this species has been found for sale as food in the past), although the feeding habitat at Bharatpur has recently been degraded by an invasion of aggressive grasses and some birds may have shifted their wintering area (two were located elsewhere in 1991), and efforts are being made to establish captive breeding flocks with the aim of reintroduction into this population and to use satellite tracking to study migration routes; the much larger eastern population winters in the Chang Jiang (= Yangtze) Valley, **China** (with vagrant records in Japan and Mongolia), the majority at Poyang Lake Nature Reserve (2,877 in 1993), where seasonal fluctuations in flood level produce ideal feeding conditions, and small numbers at East Dongling Lake Nature Reserve (38 in 1993) (Archibald and Landfried 1993, *ICF Bugle* 20,2 [1994]: 6; see also eight papers in Archibald and Pasquier 1987), but the construction of the Three Gorges Dam threatens to disrupt the flow of the Chang Jiang River and reduce the quality of this habitat (Zhu *et al.* 1987) and there is evidence of some hunting (Lu 1993). **Endangered: A2b,c;** C1; D2.

Black-necked Crane *Grus nigricollis* breeds in peat-bogs, sedge marshes, lakes and marshy grasslands on the Qinghai-Tibetan Plateau at approximately 3,400–4,300 m, in Qinghai, Sichuan, Gansu, Xinjiang and Tibet, **China**, and Ladakh, **India** (in small numbers: Narayan *et al.* 1986), and winters in similar habitats at about 1,950–3,900 m, in Tibet, Yunnan and Guizhou, China, **Bhutan** and Arunachal Pradesh, north-east India (Gole 1993), and at least formerly in northern **Myanmar** and northern **Vietnam** (wandering to Nepal: Inskipp and Inskipp 1991); knowledge of its breeding and wintering ranges has improved dramatically during the past five years, and annual winter counts have increased rapidly as new sites are discovered, and in winter 1991/1992 a total of 5,554 were found (King 1978-1979, Meyer de Schauensee 1984, Bishop 1993, Scott 1993, Wu *et al.* 1993). Surveys in 1991 found that an important breeding area on the Hongyuan-Ruoergai Plateau in Sichuan is threatened by the drainage of peat-bogs and sedge marshes for pastureland (Scott 1993), and the species's tendency to winter in traditional areas makes it vulnerable to habitat changes and human disturbance (Bishop 1993); for example, Cao Hai, Guizhou (where c.215 winter), is seriously threatened by uncontrolled building and conversion to farmland (*Oriental Bird Club Bull.* 16 [1992]: 13). **Vulnerable:** C1.

Andaman Crake *Rallina canningi* is endemic to the Andaman Islands, **India**, where the details of its range are not clear, but it has been recorded from at least North Andaman and South Andaman islands (and could possibly occur on Great Coco or Little Coco islands, Myanmar); it was formerly described as common in marshland in forest, but there only appear to be two recent records of single birds, one of which was seen in a large, open area of marshland, and the other in a small marsh on the edge of secondary forest (Ali and Ripley 1987, I. Gardner *in litt.* 1994, N. Redman *in litt.* 1994). Although forest cover remains extensive on the Andamans, it is suffering slow but continuing loss (Pande *et al.* 1991), and introduced predators may also be a threat, (J. C. Eames *in litt.* 1993). **Vulnerable:** C1.

Masked Finfoot *Heliopais personata* is found on streams, slow-flowing rivers, creeks, ponds and lake edges in lowland forest and mangroves in Bangladesh, eastern Assam and probably north-east Manipur, north-east **India**, **Myanmar**, **Laos**, **Cambodia**, central and southern **Vietnam**, **Thailand**, peninsular Malaysia and Sumatra and Java, **Indonesia**

(King *et al.* 1975, Ali and Ripley 1987, Boonsong and Round 1991, Andrew 1992, MacKinnon and Phillipps 1993; see Robson *et al.* 1989, Duckworth *et al.* 1993); in the southern part of this range it is believed to be mainly a non-breeding visitor, but it almost certainly nests in peninsular Thailand (*Oriental Bird Club Bull.* 16 [1992]: 50-52, 18 [1993]: 13-14) and perhaps Malaysia (D. R. Wells *in litt.* 1994). It is local and generally uncommon (although perhaps often overlooked: T. Mundkur *in litt.* 1994) with a world population estimated to be below 10,000 (Rose and Scott 1994), and is threatened by the destruction of lowland forest and mangroves throughout its range (J. C. Eames *in litt.* 1994; see Collins *et al.* 1991), increased traffic and development along river courses (BirdLife IP) and perhaps the fouling of forest waterways from logging (D. R. Wells *in litt.* 1994). **Vulnerable**: C1; C2a.

Great Indian Bustard *Ardeotis nigriceps* has declined in range and density since 1830, owing to habitat loss and disturbance (which still apply as threats), the early impact of hunting for food and sport, and the taking of eggs for food, so that it is now confined to grassland patches (mostly in protected areas) in the western half of **India** (King 1978-1979, Goriup 1983, Rahmani and Manakadam 1985, 1990), with the most important populations surviving in Rajasthan (500–1,000 out of an estimated total of 1,500–2,000 birds), smaller numbers in Gujarat, Madhya Pradesh, Maharashtra, Karnataka and Andhra Pradesh, and populations in other states extinct or virtually so (Rahmani 1987, 1989, Johnsgard 1991). **Endangered**: C1; C2b.

Bengal Florican *Houbaropsis bengalensis* has suffered from chronic loss of its wet grassland (notably the relatively short *Imperata*) habitat so that it now survives almost exclusively in very small, fragmented populations (totalling as few as 300–400 birds) in protected areas on the border of **Nepal** and **India** and in north-eastern India (Inskipp and Inskipp 1983, 1985, Narayan 1990, Narayan and Rosalind 1990, Rahmani *et al.* 1990, 1991, Weaver 1990). A subspecifically distinct but virtually unknown population (*blandini*) exists in southern **Cambodia** (collected in a presumed wintering area in 1928) and adjacent north-west "Cochinchina", southern **Vietnam**, whence there have been recent (1990–1994) records involving four or fewer birds from Dong Thap province, in very restricted and diminishing grass areas in and near Tram Chim Nature Reserve (Inskipp and Collar 1984, Johnsgard 1991, J. C. Eames *in litt.* 1994). **Endangered: C1; C2a.**

Lesser Florican *Sypheotides indica* has been in decline since at least the 1870s, owing to the steady conversion of its primary grassland habitat coupled with the early influence of hunting and the recent effects of drought, such that it is now restricted as a breeding bird (May–October) to tiny patches of habitat in western **India** (though recorded at this time in **Nepal**), dispersing mostly south-eastwards to south-central India for the non-breeding period (November–April); its population is judged to have plummeted by 80% in seven years from 1982 (4,374 birds) to 1989 (750), with little optimism for its long-term survival (Goriup and Karpowicz 1985, Magrath *et al.* 1985, Lachungpa and Rahmani 1990, Sankaran 1990, Sankaran and Rahmani 1990, Sankaran *et al.* 1990, 1992, Johnsgard 1991). **Critical: A1a**; C1; C2b; D1.

Sociable Lapwing *Vanellus gregarius* breeds semi-colonially, chiefly in transition zones between *Stipa* and *Artemisia* steppes, in **Russia** and **Kazakhstan** (apparently also once in Ukraine), dispersing through **Kyrgyzstan**, **Tajikistan**, **Uzbekistan**, **Turkmenistan**, **Iran**, **Turkey** and **Israel** to and from wintering grounds on dry plains, sandy wastes and shortgrass areas, often adjacent to water, including: the western Indian subcontinent in **Pakistan** (now very rare: last record in 1980) and north-west **India**, the Mesopotamian region of **Iraq** (widespread in small numbers), **Sri Lanka** (at least occasionally), **Oman** (scarce), and north-east Africa in **Eritrea** (scarce), **Sudan** (no records since 1950) and **Egypt** (few recent reports) (with records of vagrancy or lesser occurrence in up to 25 countries); there has been a rapid decline and range contraction owing to intensifying cultivation (including pesticide spraying) of and increased pastoralism (heavy grazing, trampling of nests) on virgin steppe areas (plus the expansion into them of the Rook *Corvus frugilegus*, a serious nest predator), such that in northern Kazakhstan a dramatic decline between 1930 and 1960 was compounded by a further halving of numbers between 1960 and 1987, and, with only 1,000–2,100 pairs in Russia west of the Urals, it is not clear that more than 10,000 mature individuals now survive (Cramp and Simmons 1980, Nikolaus and Hamed 1984, Urban *et al.* 1986, Nikolaus 1987, Paz 1987, Roberts 1991, Kasparek 1992, Inskipp and Collins 1993, Tucker *et al.* 1994; also M. D. Gallagher *in litt.* 1990, V. V. Khrokov *in litt.* 1993, S. Ericsson *in litt.* 1994). **Vulnerable**: A1a,b; C1; C2a.

Wood Snipe *Gallinago nemoricola* is known as a breeding bird from the Himalayas in north-west and north-east **India**, **Nepal** and **Bhutan** (and possibly Pakistan: Roberts 1991), and in central Sichuan, **China**, where it has been found to nest in alpine meadows with scattered bushes and a few streams, and dwarf scrub in barren, boulder-strewn areas, between 3,000 and 5,000 m (Meyer de Schauensee 1984, Buckton and Morris 1993). Outside the breeding season it occurs at lower altitudes in the Himalayas and is dispersed sparingly through small wetlands in the hill ranges of most of India (Ali and Ripley 1987), and is also recorded from **Bangladesh** (Thompson *et al.* 1993), **Myanmar**, **Laos**, northern **Vietnam** and **Thailand** (King *et al.* 1975) (and as a vagrant to Singapore and Sri Lanka: Medway and Wells 1976, Ali and Ripley 1987). Recent records indicate that it is sparsely distributed throughout its range, and there is evidence that it has declined in Nepal (at least locally), and, as its breeding habitat would seem to be secure, loss of habitat in the wintering range is likely to be an important factor in this decline (Buckton and Morris 1993). **Vulnerable**: C2a.

Nordmann's Greenshank *Tringa guttifer* breeds on Sakhalin Island, probably along the coast of the Sea of Okhotsk, and possibly on the Kamchatka Peninsula and in the lower reaches of the Novy Semyachik River (close to the Kronotsk Reserve), in eastern **Russia**, where it nests in lowland swamps, and swamped and thinned coniferous forest, adjacent to shallow bays; studies in 1985–1988 indicate that the total population on Sakhalin is about 30–0 pairs, that some breeding areas have already been destroyed by urbanization, and that other threats include increased crow predation and human disturbance because of new settlements near to breeding areas, and increased hunting pressure (Nechaev 1989). It has been recorded widely as a migrant and winter visitor, in **China**, **Japan**, **North Korea**, **South Korea** (98–135 individuals estimated at west coast locations in May 1988: Long *et al.* 1988), **Taiwan**, **Hong Kong (to U.K.)** (regular in spring, maximum count 58 in 1993: D. S. Melville *in litt.* 1994), the **Philippines**, **Vietnam**, **Thailand** (up to 11 on Ko Libong Island), peninsular and east **Malaysia** (regular on passage in the peninsula, but numbers have recently declined: D. R. Wells *in litt.* 1994), **Singapore**, **Indonesia** (up to 21 in south-east Sumatra), **Myanmar**, **Bangladesh** (an exceptional count of c.300 reported in winter 1988/1989) and **India**, but is known by few records (generally involving small numbers) in many of these countries and in some is probably only a vagrant (King 1978-1979, Kennerley and Bakewell 1987, Inskipp and Collins 1993); the total world population is estimated to be c.1,000 (Rose and Scott 1994). **Endangered: C1; C2b; D1.**

Spoon-billed Sandpiper *Eurynorhynchus pygmeus* breeds only in north-east **Russia**, on the Chukotski (= Chukchi) Peninsula and southwards up the isthmus of the Kamchatka Peninsula, where it nests on sea coasts with sparsely vegetated sandy ridges near lakes and marshes, a habitat which is patchily distributed along the narrow coastal zone, especially near to the mouths of some rivers and lagoons and sandy spits; its total population has been estimated to be 2,000-2,800 pairs (Tomkovich 1991). It has been recorded on passage or in winter in **China**, **North Korea**, **South Korea**, **Japan**, **Taiwan**, **Hong Kong (to U.K.)**, **Thailand**, peninsular **Malaysia**, **Singapore**, **Myanmar**, **Bangladesh**, the east coast of **India** and **Sri Lanka** (and as a vagrant to Canada and U.S.A.) (Inskipp and Collins 1993), but is known by few records in most of these countries and in some is perhaps only a vagrant. The largest known wintering concentration is on islands in the Bay of Bengal in Bangladesh, where 257 were counted in 1989 (Thompson *et al.* 1993). It only breeds successfully in years when lemming *Dicrostonyx groenlandicus* populations are moderate or high, as predators destroy most nests when lemmings are not available; this, in combination with its low numbers, limited distribution and specialized habitat requirements, makes it a vulnerable species, although a new protected area on the Chukotski Peninsula is under discussion (Tomkovich 1991). **Vulnerable: C1; C2b.**

Jerdon's Courser *Rhinoptilus bitorquatus* is a nocturnal bird known historically from a handful of records in the Penner and Godaveri valleys in Andhra Pradesh, central-eastern **India**, which had been assumed extinct (King 1978-1979) until its rediscovery in January 1986; it is found in thin thorny and non-thorny scrub on rocky and undulating ground, including disturbed areas where regeneration is affected by grazing and fuelwood collection (Bhushan 1986a,b, Ali and Ripley 1987). There are recent records from six sites in the vicinity of the Lankamalai ranges (near the Penner valley), southern Andhra Pradesh, where its known from two valleys in an area of c.2,000 km²; a planned irrigation scheme which would have affected its two valleys has been diverted in response to lobbying, and two protected areas, Sri Lankamalleswara Wildlife Sanctuary and Sri Venkateswara National Park, have recently been gazetted there, and a third is planned in a nearby area where this species has been reported (Bhushan 1992). **Endangered: B1+2c; C1; C2a**; D1.

Black-bellied Tern *Sterna acuticauda* is known from most of **India**, **Pakistan**, **Nepal**, **Bangladesh**, **Myanmar**, Yunnan, southern **China**, northern **Thailand**, **Laos**, **Cambodia** and southern **Vietnam**, where it is found on large rivers and marshes in the plains (not on the coast) up to 730 m (Ali and Ripley 1987, Inskipp and Inskipp 1991). There is evidence of a decline in Thailand (very rare, possibly now extinct: Boonsong and Round 1991), Laos and Cambodia (not recorded by recent surveys: T. Mundkur *in litt.* 1994), and in Gujarat, India (Mundkur 1988), and it is believed that the world population is below 10,000 and declining (Rose and Scott 1994). Threats include the destruction of breeding habitat (islands and sandspits in larger rivers are used for watermelon cultivation), the collection of eggs for food, and natural flooding of nests (T. Mundkur *in litt.* 1994, A. R. Rahmani *in litt.* 1994). **Vulnerable: C1.**

Indian Skimmer *Rynchops albicollis* ranges throughout northern **India** (not recorded south of c.16°N, locally fairly common, nomadic and locally migratory depending on water conditions: Ali and Ripley 1987), **Pakistan** (rare, has declined markedly in the past 50 or 60 years: Roberts 1991), **Nepal** (irregular and uncommon, has possibly bred: Inskipp and Inskipp 1991), **Bangladesh** (winter visitor, a total of 3,263 counted in 1988/1989: Harvey 1990, *Oriental Bird Club Bull.* 9 [1989]: 38-44), **Myanmar** (formerly locally common, but not recorded during recent surveys: Smythies 1986, T. Mundkur *in litt.* 1994), southern **Laos** (not observed recently: Salter 1993) and **Cambodia** (not recorded during recent surveys of prime habitats, but reported by local people to breed at one site: T. Mundkur *in litt.* 1994) (and a vagrant in south-east China, Thailand and Vietnam: Vo Quy 1975, Cheng 1987, Boonsong and Round 1991), where it is found on placid, expansive reaches of large rivers with sandbanks (Ali and Ripley 1987); the world population is estimated at c.10,000 (Rose and Scott 1994). It is believed to have declined in Pakistan because irrigation barrages have allowed the gradual encroachment of temporary cultivation into the river beds and river island tracts (Roberts 1991), and the destruction of breeding habitat, and possibly pesticides and the collection of eggs, are considered the main threats (T. Mundkur *in litt.* 1994, A. R. Rahmani *in litt.* 1994). **Vulnerable: C1; C2a.**

Pale-backed Pigeon *Columba eversmanni* migrates from its breeding grounds (where it uses holes in both trees, buildings, cliffs and earth banks) in the deserts and settled regions of **Uzbekistan, Turkmenistan, Tajikistan, Kyrgyzstan**, southern **Kazakhstan** and **Afghanistan** (one record from Tibet, **China**) into riverine plains and fields in western **Pakistan** and northern **India**, where it was formerly to be found in substantial flocks at regular sites each winter (Vaurie 1972, Ali and Ripley 1981, Flint *et al.* 1984, Roberts 1991; also Vittery 1994); for unknown reasons it has dramatically decreased in Central Asia in recent years, and is now widely regarded as very rare there (S. C. Madge *in litt.* 1993). **Vulnerable**: A1a.

Sri Lanka Wood-pigeon *Columba torringtoni* is endemic to **Sri Lanka**, where it breeds in montane forest above 1,000 m (Henry 1955) in the Hill Zone in the centre of the island, although it regularly moves to lower areas, down to c.300 m (S. W. Kotagama *in litt.* 1992). It is believed to be declining, probably as a result of continuing loss of habitat, as natural forests are replaced by monoculture plantations which do not support the species (Hoffmann 1984), but there is recent evidence that it has at least partially adapted to man-made environments, as there are recent records from wooded village areas and gardens (T. W. Hoffmann *in litt.* 1993). **Vulnerable**: B1+2c; C1; C2a.

Pale-capped Pigeon *Columba punicea* has been recorded in north-east **India, Bangladesh, Myanmar, Thailand**, southern **China** (Tibet and Hainan Island), southern **Laos** and central and southern **Vietnam**, where it is found in evergreen forest, mangroves, scrub and cultivated areas in the lowlands to c.1,600 m (King *et al.* 1975, Ali and Ripley 1987, Cheng 1987, Boonsong and Round 1991); it is extremely local in distribution, and its breeding range and migratory movements are poorly understood (Collar and Andrew 1988). Recent records are from India, where one was seen in the Dibru Saikhowa Wildlife Sanctuary, Assam, in 1993, in an area of secondary forest under considerable human pressure (A. R. Rahmani *in litt.* 1994, R. Raza *in litt.* 1994), Bangladesh, where two or three were recorded at Bhanugach Forest Reserve in 1988 and 1989 (Thompson *et al.* 1993), Thailand, where it is uncommon or rare (Boonsong and Round 1991) and south Annam, Vietnam, where flocks of 14 and 41 were seen in 1991 and 1992, plus a report from the Thuong Da Nhim Nature Reserve, the species being threatened by deforestation and has been recorded in trade (Eames *et al.* 1992, *Oriental Bird Club Bull.* 15 [1992]: 43-47, J. C. Eames *in litt.* 1994). **Vulnerable**: C1; C2a.

Intermediate Parakeet *Psittacula intermedia* is known by seven skins of unknown origin (Ali and Ripley 1987) and small numbers of live specimens, reputed to have come from the plains of Uttar Pradesh, which have recently appeared in bird markets in **India** (Sane *et al.* 1986). It has been suggested that it may be of hybrid origin (Husain 1959), but this is disputed (Walters 1985). Its habitat requirements, status and any threats are unknown, although it is presumably rare. **Vulnerable**: D1.

Red-faced Malkoha *Phaenicophaeus pyrrhocephalus* is known from **Sri Lanka**, with unconfirmed records from southern Kerala and western Tamil Nadu, India, being found in dense forest, chiefly evergreen, from the lowlands to 1,700 m (Ali and Ripley 1987). In the Dry Zone of northern and eastern Sri Lanka it is confined mostly to riverine forest (S. W. Kotagama *in litt.* 1992), and occurs in scattered colonies, and in the Wet Zone of south-west Sri Lanka suitable habitat is much reduced and fragmented (see Collins *et al.* 1991); it is now scarce and declining because of loss of habitat and hunting (Hoffmann 1984). **Vulnerable**: A1b; C1; C2a.

Green-billed Coucal *Centropus chlororhynchus* is endemic to **Sri Lanka**, where it is found in high humid forest with a dense undergrowth, particularly of bamboo and rattan in disturbed areas, below 800 m in the Wet Zone in the south-west of the island (Ali and Ripley 1987, S. W. Kotagama *in litt.* 1992). It is rare, local and severely threatened by loss of habitat (Hoffmann 1984), as forest cover in this part of the island is much reduced and fragmented, the largest remaining area being Sinharaja National Heritage Wilderness Area (Collins *et al.* 1991). **Endangered**: A1b; B1+2c; C1; C2a.

Forest Owlet *Athene blewitti* ranges (or formerly ranged) along the length of the Satpura mountains in south-east Gujarat, southern Madhya Pradesh, northern Maharashtra and north-west Orissa, **India**, and has been recorded in moist deciduous forest and wild mango groves, usually near to streams; it is known historically from less than 12 specimens, the last collected in 1914, and the only recent record is of an individual attributed to this species (but not conclusively identified) which was photographed near Nagpur, Madhya Pradesh, in 1968 (Ripley 1976, Ali and Ripley 1987; see photograph in Burton 1984). If it survives at all, it is presumably threatened by habitat destruction. **Critical**: D1.

Dark-rumped Swift *Apus acuticauda* is known to breed only in **India**, around rocky cliffs and deep gorges at two localities in the Khasi Hills, Meghalaya (Ali and Ripley 1987), and is presumed to breed in Mizoram (Brooke 1969); however, the type-specimen may be from Nepal (Inskipp and Inskipp 1991), there is an old record from the Andaman Islands, India, in July (Ali and Ripley 1987), it possibly occurs in Myanmar (Smythies 1986) and it is a vagrant to north-west Thailand (Boonsong and Round 1991), so its true status, and any threats, are unknown. **Vulnerable**: D2.

Ward's Trogon *Harpactes wardi* is known from the eastern Himalayas, in **Bhutan** (uncommon, with only eight collected in surveys between 1966 and 1973, and two recorded in 1993: Ali *et al.* in prep., K. D. Bishop *in litt.* 1994), Arunachal Pradesh, **India** (small numbers seen recently at three localities: Singh in prep.), northern **Myanmar** (formerly locally common, but no recent records: Smythies 1986), north-west Yunnan, **China** (three collected in 1973: Peng *et al.* 1980), and the mountains of north-west Tonkin, northern **Vietnam** (no recent records), where it is found in tall broadleaf evergreen forest between 1,500 and 3,000 m (Ali and Ripley 1987). It is threatened by forest clearance and degradation in much of its range (see Collins *et al.* 1991). **Vulnerable**: C1; C2a.

Blyth's Kingfisher *Alcedo hercules* ranges from eastern **Nepal**, **Bhutan**, north-east **India**, **Bangladesh**, **Myanmar**, **China** (southern Yunnan and Hainan Island), north-west **Thailand** (very rare visitor: Boonsong and Round 1991), northern and central **Laos** and **Vietnam** (King *et al.* 1975), where it is found along streams in evergreen forest in hills up to 1,200 m (Ali and Ripley 1987), mainly at 625–1,000 m (Fry and Fry 1992). Recent records are of single birds from Nepal (Inskipp and Inskipp 1991), Bhutan (Clements 1992), Bangladesh (Thompson *et al.* 1993), China (seen in 1989 in Mengyang Nature Reserve, Yunnan: L. X. Han *in litt.* 1994), Laos (eight sightings in Nakal Plateau/Nam Theun protected area in 1994: T. D. Evans and R. J. Timmins verbally 1994) and Vietnam (at several localities since 1990: Eames *et al.* 1992, Robson *et al.* 1993a, J. C. Eames *in litt.* 1994), indicating that it is still widespread at low densities within its historical range (much of which has not been visited by ornithologists in recent years), although deforestation is reducing and fragmenting its habitat (see Collins *et al.* 1991) and human disturbance and river pollution are possibly also threats (Eames *et al.* 1992). **Vulnerable**: A1b; A2b; C1; C2a.

Rufous-necked Hornbill *Aceros nipalensis* is known from Nepal (probably extinct: Inskipp and Inskipp 1991), **Bhutan**, north-east **India**, **Bangladesh**, **China** (southern Yunnan and south-east Tibet: Cheng 1987), **Myanmar**, western **Thailand**, northern and central **Laos** and **Vietnam**, where it is found in tall evergreen forest in the foothills between c.600 and 2,100 m (King *et al.* 1975, Ali and Ripley 1987, Boonsong and Round 1991, Ali *et al.* in prep.). It has recently been recorded, generally in small numbers, in Bhutan (Clements 1992, Inskipp and Inskipp 1993a,b, K. D. Bishop *in litt.* 1994), India (M. Jäderblad *in litt.* 1994, R. Kaul verbally 1994, R. H. Raza *in litt.* 1994, Singh in prep.), Myanmar (K. D. Bishop *in litt.* 1993), Laos (common in Nakal Plateau/Nam Theun protected area: T. D. Evans and R. J. Timmins verbally 1994), and Vietnam (J. C. Eames *in litt.* 1994), and it occurs in at least two nature reserves in south-west Thailand, although it is probably close to extinction in the north of the country (Round 1988, Poonswad 1993) and it is reportedly declining in India because of the clearance of primary forest (Ali and Ripley 1987). Deforestation is reducing and fragmenting suitable habitat in much of its range (see Collins *et al.* 1991), which overlaps closely with that of upland shifting cultivators in north-west Thailand (and elsewhere), so that hunting is also likely to be a problem (Round 1988). **Vulnerable**: A1b,c; C1; C2a.

Narcondam Hornbill *Aceros narcondami* is endemic to Narcondam, a tiny island of 6.82 km^2 in the north-east Andaman Islands, **India**, where it is found in evergreen forest; the population was estimated to be c.400 in 1982 (and in 1993: V. Prakesh *per* R. Sankaran 1994), and not immediately threatened because the island is uninhabited, but it remains vulnerable to any future habitat destruction or introduction of alien predators or competitors (Hussain 1984). **Vulnerable**: D1; D2.

Nicobar Bulbul *Hypsipetes nicobariensis* is endemic to the small islands (total area 467 km^2: Sankaran 1993b) of the Nancourie group (Camorta, Trinkut, Nancowry and Katchall) in the central Nicobar Islands (and recorded on Pilu Milu, an islet off Little Nicobar), **India**, where it was formerly a common bird in forest and gardens (Abdulali 1967, 1978, Ali and Ripley 1987), but it appears to have declined within this small range (although still common on Katchall where a loose flock of over 100 birds was seen in 1994: R. Sankaran *in litt.* 1994), possibly through displacement by the introduced Red-whiskered Bulbul *Pycnonotus jocosus* (Sankaran 1993a). **Vulnerable**: A1d; B1+2e; C1; C2a.

Sri Lanka Whistling-thrush *Myiophonus blighi* is endemic to the Hill Zone of central **Sri Lanka**, where it is found along mountain streams running through dense, damp montane forest, in fern-clad ravines and gorges above 900 m (Legge 1880, Ali and Ripley 1987), although it is now probably confined to the Hortons Plains National Park within an altitudinal range of 1,300-2,300 m (S. W. Kotagama *in litt.* 1992, Kotagama in prep.). It is rare and declining, probably as a result of the replacement of natural forest with monoculture plantations, which are largely devoid of undergrowth and hence unsuitable habitat (Hoffmann 1984). **Endangered**: B1+2c; C1; D1.

Grey-sided Thrush *Turdus feae* is known to breed only in north-east **China**, where it has been recorded in Hebei, Shanxi and Beijing municipality, in broadleaf forest in the mountains (Cheng 1987, King 1987). It winters in north-east **India** (probably no recent records: T. P. Inskipp *in litt.* 1994), **Myanmar** and north-west **Thailand** (uncommon: Boonsong and Round 1991) in evergreen forest above 1,000 m (King *et al.* 1975, Ali and Ripley 1987, Boonsong and Round 1991). It is only recorded from about five localities in northern China, including Pangquanguo Nature Reserve (BirdLife BPD), and its breeding habitat must have been much reduced and fragmented by deforestation in this densely populated region of China (M.J.C.; see Collins *et al.* 1991). **Vulnerable**: B1+2c; C1; C2a.

Rusty-bellied Shortwing *Brachypteryx hyperythra* occurs in the eastern Himalayas in Sikkim, Assam and Arunachal Pradesh, **India** and north-west Yunnan, **China**, and the Naga Hills in Nagaland, India, where it is found in broadleaf evergreen forest and bamboo from around 1,800 to 3,000 m in the breeding season (Peng *et al.* 1980, Heath 1988), and forest, scrub and bamboo from the plains to 2,900 m in winter (Ali and Ripley 1987). Historical records suggest that it is very scarce and local in distribution (Heath 1988), and the only recent records are of two collected at Maku in Yunnan in 1973 (Peng *et al.* 1980), three collected in and near Namdapha National Park, Arunachal Pradesh, in 1987 and 1988 (Ripley *et al.* 1991) and one seen in Kamleng Wildlife Sanctuary, Arunachal Pradesh, in 1994 (R. H. Raza *in litt.* 1994); it is presumably threatened by deforestation, particularly at the lower altitudes where it winters (M. Katti *in litt.* 1993). **Vulnerable:** C1; C2a.

White-browed Bushchat *Saxicola macrorhyncha* occupies open, waterless areas with scrub in the semi-deserts of **Pakistan** and north-west **India** in Rajasthan, Gujarat, Haryana, and western Uttar Pradesh, and there are also two old records from **Afghanistan** (Ali and Ripley 1987, Rahmani 1993). It has not been seen recently in Pakistan, and is possibly extinct there (Roberts 1992), while in India most recent records are from Desert National Park and other localities in Rajastan, where a survey in 1994 located a total of 75 individuals, including 24 in one day over a distance of 30 km (A. R. Rahmani *in litt.* 1994). One of the main reasons for its apparent range contraction could be loss of suitable habitat, as improved irrigation facilities have converted vast tracts of semi-arid scrubland into cropland (Rahmani 1993). **Vulnerable:** A1a,b; C1; C2a.

White-throated Bushchat *Saxicola insignis* breeds very locally in alpine or subalpine meadows with scrub in the mountains of **Mongolia** and adjacent parts of **Kazakhstan** (Stresemann and Portenko 1982), has been recorded on passage in Inner Mongolia, Qinghai, Sichuan and Yunnan, **China** (Meyer de Schauensee 1984, Cheng 1987, BirdLife BPD), and in winter in the Gangetic plains of Uttar Pradesh and Bihar, the Sikkim foothills and northern West Bengal, **India**, and the terai of **Nepal**, where it is found in grassland, reedbeds and tamarisks near rivers (Ali and Ripley 1987, Inskipp and Inskipp 1991). The only wintering locality where it has regularly been recorded in recent years is Kosi Barrage in Nepal, where up to ten occur annually (Inskipp and Inskipp 1991), suggesting that it may have declined, possibly as a result of the destruction and modification of grassland and wetland habitats in its wintering range (Majumdar and Brahmachari 1986, Rahmani 1986). **Vulnerable:** C1; C2a.

Ashy-headed Laughingthrush *Garrulax cinereifrons* is endemic to **Sri Lanka**, where it is found in the interior of dense wet forest and bamboo thickets from the lowlands of the Wet Zone (in the south-west of the island) to 1,200 m in the adjacent foothills in the Hill Zone (Legge 1880, Ali and Ripley 1987, T. W. Hoffmann *in litt.* 1993); it is apparently confined to undisturbed forest, and is declining because of forest destruction and the disturbance caused by (e.g.) logging and firewood collection (Hoffmann 1984). **Vulnerable:** B1+2c; C1; C2a.

Brown-capped Laughingthrush *Garrulax austeni* occurs in the mountains of north-east **India** to the south of the Brahmaputra River, in Meghalaya, Assam, Nagaland and Manipur, and the Chin Hills in western **Myanmar**, where it is found in oak and rhododendron forest, including secondary growth, and bamboo thickets on the forest edge, from 1,500 to 2,700 m, rarely down to 1,200 m; it is a scarce bird (Ali and Ripley 1987), although locally common on Mount Victoria in Myanmar (Smythies 1986). There appear to be no recent records and it is may be threatened by forest clearance and degradation (see Collins *et al.* 1991). **Data Deficient.**

Marsh Babbler *Pellorneum palustre* occurs in the plains (and adjacent foothills) of the Brahmaputra River in north-east **India**, and in northern **Bangladesh**, where it is found in reedbeds, coarse high grass alongside swamps and rivers, and elephant grass and scrub on marshy ground, from the plains to 800 m; it was formerly locally common (Ali and Ripley 1987), but the only recent published record appears to be from Bangladesh in 1989 (Thompson *et al.* 1993), and it must be threatened by the destruction and modification of its grassland and wetland habitat (Majumdar and Brahmachari 1986, Rahmani 1986). **Vulnerable:** A1b; C1; C2a.

Rufous-throated Wren-babbler *Spelaeornis caudatus* occurs in eastern **Nepal**, **Bhutan**, and Sikkim, northern West Bengal (Darjiling) and eastern Arunachal Pradesh, **India**, where it is a scarce bird of the undergrowth of dense evergreen forest at 1,600 to 3,100 m (Ali and Ripley 1987, Inskipp and Inskipp 1991, 1992, 1993b). Within this small range, it is threatened by the destruction and fragmentation of its habitat (Inskipp 1989; see Collins *et al.* 1991). **Vulnerable:** B1+2c; C1; C2a.

Rusty-throated Wren-babbler *Spelaeornis badeigularis* is known only from the type-specimen, collected in January 1947 in the Mishmi Hills, eastern Arunachal Pradesh, north-east **India**, in subtropical wet forest at 1,600 m (Ali and Ripley 1987). Deforestation and forest degradation are likely to be the main threats (see Collins *et al.* 1991). **Vulnerable:** B1+2c; D1.

Tawny-breasted Wren-babbler *Spelaeornis longicaudatus* is endemic to north-east **India**, known from the Khasi Hills of Meghalaya, the Cachar Hills of Assam, and Manipur, where it is found in evergreen forest with dense undergrowth, ravines and steep, rocky hillsides with mossy outcrops, at 1,000 to 2,000 m; it is described as scarce, although more abundant in the Khasi Hills (Ali and Ripley 1987), and the only recent record appears to be of two at Shillong peak, Meghalaya, in 1979 (Grimmett 1979). It is threatened by the destruction and fragmentation of its habitat (see Collins *et al.* 1991). **Vulnerable**: B1+2c; C1; C2a.

Snowy-throated Babbler *Stachyris oglei* is only known from the Patkai and Mishmi Hills in eastern Arunachal Pradesh, north-east **India**, where it has been recorded in moist, dense scrub in rocky ravines, with a nest found at c.1,800 m or higher (Ali and Ripley 1987). There are several recent records from Namdapha National Park (all outside the breeding season, and at relatively low altitude), where seven were collected along the middle Noa Dihang River at c.800 m in March 1979 (Ripley *et al.* 1991), flocks of 10-15 seen in February 1994, usually in bamboo (M. Jäderblad *in litt.* 1994), and birds seen along the Deban-Hornbill trek at 450 m in primary evergreen forest in February 1994 (Singh in prep.). It is presumably threatened by the destruction and fragmentation of its habitat within its small range (see Collins *et al.* 1991). **Vulnerable**: B1+2c; C1; C2a.

Jerdon's Babbler *Chrysomma altirostre* is a bird of reedbeds and seasonally inundated grasslands near rivers, known from the plains of the Indus River in **Pakistan** (rare and extremely local, with some recent records: Roberts 1992), central **Nepal** (small numbers recently recorded in Royal Chitwan National Park: Inskipp and Inskipp 1991), the plains of the Brahmaputra River in northern West Bengal and Assam in north-east **India** (locally common: Ali and Ripley 1987, T. P. Inskipp *in litt.* 1994) and on the plains of the Irrawaddy River in north-east and south-central **Myanmar** (formerly locally common but no recent records: Smythies 1986). It appears to require extensive areas of dense vegetation and there is evidence that habitat destruction has caused substantial declines in Pakistan and Myanmar (Smythies 1986, Roberts 1991), and it is presumably threatened in India by the widespread destruction and modification of grassland and wetland habitats (see Rahmani 1986). **Vulnerable**: A1b.

Black-breasted Parrotbill *Paradoxornis flavirostris* occurs in the plains (and adjacent foothills) of the Brahmaputra River in north-east **India** and **Nepal** (no records this century: Inskipp and Inskipp 1991), in northern **Bangladesh** and on Mount Victoria, western **Myanmar**, where it is found in reed thickets, elephant grass, wild cardamom, and mixed grasses along the banks of rivers in the plains, and mixed grass and bamboo and elephant grass (ekra) up to 1,900 m in the hills (King *et al.* 1975, Ali and Ripley 1987). It was formerly locally common in the plains, but its current status is poorly known as the only recent records appear to be from Kaziranga National Park (C. R. Robson *in litt.* 1994), and it must be threatened by the destruction and modification of its grassland and wetland habitat (see Majumdar and Brahmachari 1986, Rahmani 1986). **Vulnerable**: A1a,b; C1; C2a.

Rufous-vented Prinia *Prinia burnesii* has two disjunct populations, in the plains of the Indus in **Pakistan** and adjacent north-west **India**, and the plains of the Brahmaputra River, Assam and western Bihar in north-east India and adjacent northern **Bangladesh**, where it is found in long grasslands, sometimes where mixed with acacias and tamarisks, mainly in the vicinity of large rivers and their tributaries and in swamps (Ali and Ripley 1987). The population in Pakistan is locally common or abundant in its restricted habitat in the Punjab and northern Sind, much less so in southern Sind (Roberts 1992), and the eastern population was also formerly locally common (Ali and Ripley 1987), but with few recent published records (BirdLife BPD). It must be threatened by the destruction and modification of its grassland and wetland habitat (see Majumdar and Brahmachari 1986, Rahmani 1986, Roberts 1991). **Vulnerable**: A1b.

Long-billed Bush-warbler *Bradypterus major* occurs in the western Himalayas, in northern **Pakistan** (few recent records and distribution imperfectly known, probably partly because of its extremely secretive habits: Roberts 1992) and north-west **India** (fairly common, but extremely local: Ali and Ripley 1987, Collar and Andrew 1988), Xinjiang, western **China** (very rare: Cheng 1987) and the eastern Pamir mountains in Tajikistan (perhaps only a vagrant: Inskipp and Collins 1993), where it is found from 2,400 to 3,600 m on open slopes near the forest edge and in terraced cultivation, in low thorny scrub and rank grass and bracken (Ali and Ripley 1987, Roberts 1992). It is thought that its range is contracting in Kashmir, possibly owing to changes in agricultural practices (Collar and Andrew 1988). **Vulnerable**: C2a.

Bristled Grass-warbler *Chaetornis striatus* has been found in **Pakistan** (only two definite records, one in 1976, possibly only a vagrant: Roberts 1992), **Nepal** (small numbers recently found nesting in Royal Chitwan National Park: Inskipp and Inskipp 1991), **Bangladesh** (no recent records, but could still occur locally: Harvey 1990) and throughout much of **India** (very locally, though described as fairly common in Gujarat, Andhra Pradesh and southern West Bengal), being found in mixed grassland and scrub, swampy grassland and also rice fields (Ali and Ripley 1987), but there appear to be very few recent published records. It may be threatened by the widespread destruction and modification of grassland and wetland habitats within its range (see Majumdar and Brahmachari 1986, Rahmani 1986). **Vulnerable**: A1b; C1; C2a.

Brown-chested Jungle-flycatcher *Rhinomyias brunneata* breeds in south-east **China**, in Jiangsu, Zhejiang, Fujian, Jiangxi, Guangdong and Guangxi, in forest and bamboo thickets in the lowlands to 1,100 m (Meyer de Schauensee 1984, Cheng 1987). Outside the breeding season, it is recorded from **Thailand** (rare passage migrant: Boonsong and Round 1991), peninsular **Malaysia** (winter visitor and passage migrant: Medway and Wells 1976), **Singapore** (rare passage migrant and winter visitor: Briffett and Supari 1993), the Andaman and Nicobar Islands, **India** (status unclear, may be resident and represent another species: Collar and Andrew 1988; see Ali and Ripley 1987, *Oriental Bird Club Bull.* 11

[1990]: 40-48) and **Brunei** (one record: Mann 1987); in peninsular Malaysia it winters in mature (and not secondary) forest and it is an extreme lowland forest specialist (D. R. Wells *in litt.* 1994). It is locally common in China (e.g. Kennerley 1987), and ringing records of nocturnal passage migrants from Fraser's Hill in the mountains of peninsular Malaysia (probably near the centre of its non-breeding range) indicate that it is not rare (12 trapped in spring and 640 in autumn between 1965 and 1973: Wells 1992), but it must have been affected by the extensive deforestation which has taken place in both its breeding and wintering ranges (Collar and Andrew 1988, D. R. Wells *in litt.* 1994; see Collins *et al.* 1991). **Vulnerable:** A1b; A2b.

Kashmir Flycatcher *Ficedula subrubra* breeds in mixed broadleaf forest between 1,800 and 2,700 m in Kashmir and the Pir Panjal range in north-west **India** and northern **Pakistan**, and winters in gardens, tea estates and forest edge above 750 m in **Sri Lanka** and the southern Western Ghats, south-west peninsular India (Ali and Ripley 1987, Harrap and Redman 1989), occurring as a scarce migrant in **Nepal** (Inskipp and Inskipp 1991). It was formerly common within its breeding range (Ali and Ripley 1987), but appears to have declined (A. J. Gaston *in litt.* 1993), and it is vulnerable to continuing forest destruction and degradation there (C. R. Robson *in litt.* 1993). **Vulnerable:** B1+2c.

White-naped Tit *Parus nuchalis* is endemic to **India**, with a widely disjunct distribution in the western and southern parts of the country; in western India, it is recorded from northern Gujarat (including Kutch) and central and south-central Rajastan, where a comparison of recent with historical records indicates that it has declined drastically, and in southern India it is only known by three old records from southern Karnataka and southern Andhra Pradesh, and recent records from Wynaad, Kerala, where it is rare (Zacharias and Gaston 1993); it is confined to thorny scrub-forest dominated by *Acacia* spp., and its decline is linked to the rapid loss of dry forest cover because of the cutting of tree branches to feed livestock, and agricultural encroachment (Hussain *et al.* 1992), which perhaps leads to a lack of suitable nest holes as old trees are removed (A. R. Rahmani *in litt.* 1994). **Vulnerable:** A1b; C1; C2a.

Beautiful Nuthatch *Sitta formosa* inhabits the mountains of north-east **India** (recent records of small numbers in Arunachal Pradesh and North Cachar: Grimmett 1979, M. Jäderblad *in litt.* 1994, R. H. Raza *in litt.* 1994, Singh in prep.), **Bhutan** (one recent record: K. D. Bishop *in litt.* 1994), **Myanmar** (no recent information), south-east Yunnan, **China** (very rare: Cheng 1987), northern and central Laos (several seen in Nakal Plateau/Nam Theun protected area in 1994: T. D. Evans and R. J. Timmins verbally 1994), north-west **Thailand** (one record in 1986: *Oriental Bird Club Bull.* 3 [1986]: 33-36), northern **Vietnam** (no recent records: J. C. Eames *in litt.* 1994) and possibly Bangladesh (Harvey 1990, Thompson *et al.* 1993); it is found in evergreen forest between 1,500 and 2,100 m, descending to lower altitudes in winter (King *et al.* 1975, Ali and Ripley 1987). It is extremely local within its extensive range, suggesting that it may have specialized habitat requirements, and it is presumably vulnerable to habitat destruction and degradation (see Collins *et al.* 1991). **Vulnerable:** C1; C2a.

Green Avadavat *Amandava formosa* is endemic to central **India**, where it is very locally and unevenly distributed, and generally scarce, from southern Rajastan and northern Madhya Pradesh south to southern Maharashtra and northern Andhra Pradesh (other than a few isolated records further north, including in Delhi Union Territory, probably of escaped cagebirds: Gaston and Macrell 1980, T. P. Inskipp *in litt.* 1994), and is found in tall grassland, scrub and sometimes agricultural land (Ali and Ripley 1987). A small breeding colony formerly present in Lahore, Pakistan, is believed to have resulted from escaped cagebirds (Roberts 1992). There has been widespread habitat destruction and disturbance within its range (Gaston 1984), but the main threat may be trapping, as it is still regularly seen in bird markets (A. R. Rahmani *in litt.* 1994). **Vulnerable:** C1; C2a.

Yellow Weaver *Ploceus megarhynchus* is only known from **India**, in the plains and foothills of northern Uttar Pradesh, southern and eastern West Bengal, western Assam (Ali and Ripley 1987) and near Delhi (up to 35 nests since 1979 at Hastinapur, near Meerut, and several near nests at Okhla in 1993: Rai 1986, *Oriental Bird Club Bull.* 18 [1993]: 67-70), where it is found in grasslands with scrub and trees, particularly seasonally inundated grassland and marshes dotted with isolated trees (Ali and Ripley 1984). It appears to be extremely local, and is threatened by the widespread destruction and modification of grasslands and wetlands within its range (see Majumdar and Brahmachari 1986, Rahmani 1986). **Vulnerable:** C1; C2a.

Sri Lanka Magpie *Urocissa ornata* is endemic to **Sri Lanka**, where it is found in dense evergreen forest up to 2,100 m in the south-west aspects of the Hill Zone and the adjacent parts of the Wet Zone down to 50 m (Ali and Ripley 1987, T. W. Hoffmann *in litt.* 1993). It appears to be confined to primary forest, and is declining because of forest loss and disturbance, particularly as natural forests are replaced by monoculture plantations (Hoffmann 1984), and because of the spread of Asian Koel *Eudynamys scolopacea*, which parasitizes the magpie along forest edges (S. W. Kotagama *in litt.* 1994). **Vulnerable:** B1+2a,c; C1; C2a.

Threatened and Near-threatened species by country lists

BANGLADESH - Threatened species

Dalmatian Pelican *Pelecanus crispus*
Spot-billed Pelican *Pelecanus philippensis*
White-bellied Heron *Ardea insignis*
Oriental Stork *Ciconia boyciana*
Lesser Adjutant *Leptoptilos javanicus*
Greater Adjutant *Leptoptilos dubius*
White-winged Duck *Cairina scutulata*
Ferruginous Duck *Aythya nyroca*
Baer's Pochard *Aythya baeri*
Pallas's Sea-eagle *Haliaeetus leucoryphus*
Greater Spotted Eagle *Aquila clanga*
Imperial Eagle *Aquila heliaca*
Lesser Kestrel *Falco naumanni*
Swamp Francolin *Francolinus gularis*
Manipur Bush-quail *Perdicula manipurensis*
Masked Finfoot *Heliopais personata*
Wood Snipe *Gallinago nemoricola*
Nordmann's Greenshank *Tringa guttifer*
Spoon-billed Sandpiper *Eurynorhynchus pygmeus*
Black-bellied Tern *Sterna acuticauda*
Indian Skimmer *Rynchops albicollis*
Pale-capped Pigeon *Columba punicea*
Blyth's Kingfisher *Alcedo hercules*
Rufous-necked Hornbill *Aceros nipalensis*
Marsh Babbler *Pellorneum palustre*
Black-breasted Parrotbill *Paradoxornis flavirostris*
Rufous-vented Prinia *Prinia burnesii*
Bristled Grass-warbler *Chaetornis striatus*

BANGLADESH - Near-Threatened species

Oriental Darter *Anhinga melanogaster*
Painted Stork *Mycteria leucocephala*
Asian Openbill *Anastomus oscitans*
Black-headed Ibis *Threskiornis melanocephalus*
Red-naped Ibis *Pseudibis papillosa*
Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*
White-rumped Vulture *Gyps bengalensis*
Long-billed Vulture *Gyps indicus*
Cinereous Vulture *Aegypius monachus*
Red-headed Vulture *Sarcogyps calvus*
Pallid Harrier *Circus macrourus*
Pied Falconet *Microhierax melanoleucus*
Red-necked Falcon *Falco chicquera*
White-cheeked Partridge *Arborophila atrogularis*
Grey-headed Lapwing *Vanellus cinereus*
Asian Dowitcher *Limnodromus semipalmatus*
Spot-bellied Eagle-owl *Bubo nipalensis*
Tawny Fish-owl *Ketupa flavipes*
Brown-winged Kingfisher *Pelargopsis amauropterus*
Blue-naped Pitta *Pitta nipalensis*
Mangrove Pitta *Pitta megarhyncha*
Long-billed Thrush *Zoothera monticola*
Black-breasted Thrush *Turdus dissimilis*
Firethroat *Luscinia pectardens*
Jerdon's Bushchat *Saxicola jerdoni*
Yellow-throated Laughingthrush *Garrulax galbanus*
Slender-billed Scimitar-babbler *Xiphirhynchus superciliaris*
Spotted Wren-babbler *Spelaeornis formosus*
Yellow-throated Fulvetta *Alcippe cinerea*
Rufous-throated Fulvetta *Alcippe rufogularis*
Black-browed Parrotbill *Paradoxornis atrosuperciliaris*

Rufous-headed Parrotbill *Paradoxornis ruficeps*
Yellow-vented Warbler *Phylloscopus cantator*
Spot-winged Starling *Saroglossa spiloptera*

BHUTAN - Threatened species

White-bellied Heron *Ardea insignis*
Ferruginous Duck *Aythya nyroca*
Pallas's Sea-eagle *Haliaeetus leucoryphus*
Chestnut-breasted Partridge *Arborophila mandellii*
Blyth's Tragopan *Tragopan blythii*
Black-necked Crane *Grus nigricollis*
Wood Snipe *Gallinago nemoricola*
Ward's Trogon *Harpactes wardi*
Blyth's Kingfisher *Alcedo hercules*
Rufous-necked Hornbill *Aceros nipalensis*
Rufous-throated Wren-babbler *Spelaeornis caudatus*
Beautiful Nuthatch *Sitta formosa*

BHUTAN - Near-Threatened species

Red-headed Vulture *Sarcogyps calvus*
Satyr Tragopan *Tragopan satyra*
Spot-bellied Eagle-owl *Bubo nipalensis*
Tawny Fish-owl *Ketupa flavipes*
Yellow-rumped Honeyguide *Indicator xanthonotus*
Blue-naped Pitta *Pitta nipalensis*
Pied Thrush *Zoothera wardii*
Long-billed Thrush *Zoothera monticola*
Gould's Shortwing *Brachypteryx stellata*
Rufous-breasted Bush-robin *Tarsiger hyperythrus*
Blue-fronted Robin *Cinclidium frontale*
Purple Cochoa *Cochoa purpurea*
Slender-billed Scimitar-babbler *Xiphirhynchus superciliaris*
Long-billed Wren-babbler *Rimator malacoptilus*
Spotted Wren-babbler *Spelaeornis formosus*
Black-headed Shrike-babbler *Pteruthius rufiventer*
Yellow-throated Fulvetta *Alcippe cinerea*
Rufous-throated Fulvetta *Alcippe rufogularis*
Rufous-headed Parrotbill *Paradoxornis ruficeps*
Grey-crowned Prinia *Prinia cinereocapilla*
Yellow-vented Warbler *Phylloscopus cantator*

INDIA - Threatened species

Dalmatian Pelican *Pelecanus crispus*
Spot-billed Pelican *Pelecanus philippensis*
White-bellied Heron *Ardea insignis*
Oriental Stork *Ciconia boyciana*
Lesser Adjutant *Leptoptilos javanicus*
Greater Adjutant *Leptoptilos dubius*
White-headed Duck *Oxyura leucocephala*
Lesser White-fronted Goose *Anser erythropus*
White-winged Duck *Cairina scutulata*
Marbled Teal *Marmaronetta angustirostris*
Pink-headed Duck *Rhodonessa caryophyllacea*
Ferruginous Duck *Aythya nyroca*
Baer's Pochard *Aythya baeri*
Pallas's Sea-eagle *Haliaeetus leucoryphus*
Greater Spotted Eagle *Aquila clanga*
Imperial Eagle *Aquila heliaca*
Lesser Kestrel *Falco naumanni*
Nicobar Scrubfowl *Megapodius nicobariensis*

Swamp Francolin *Francolinus gularis*
Manipur Bush-quail *Perdicula manipurensis*
Chestnut-breasted Partridge *Arborophila mandellii*
Himalayan Quail *Ophrysia superciliosa*
Western Tragopan *Tragopan melanocephalus*
Blyth's Tragopan *Tragopan blythii*
Sclater's Monal *Lophophorus sclateri*
Cheer Pheasant *Catreus wallichi*
Hume's Pheasant *Syrmaticus humiae*
Siberian Crane *Grus leucogeranus*
Black-necked Crane *Grus nigricollis*
Andaman Crake *Rallina canningi*
Masked Finfoot *Heliopais personata*
Great Indian Bustard *Ardeotis nigriceps*
Bengal Florican *Houbaropsis bengalensis*
Lesser Florican *Sypheotides indica*
Sociable Lapwing *Vanellus gregarius*
Wood Snipe *Gallinago nemoricola*
Nordmann's Greenshank *Tringa guttifer*
Spoon-billed Sandpiper *Eurynorhynchus pygmeus*
Jerdon's Courser *Rhinoptilus bitorquatus*
Black-bellied Tern *Sterna acuticauda*
Indian Skimmer *Rynchops albicollis*
Pale-backed Pigeon *Columba eversmanni*
Pale-capped Pigeon *Columba punicea*
Intermediate Parakeet *Psittacula intermedia*
Forest Owlet *Athene blewitti*
Dark-rumped Swift *Apus acuticauda*
Ward's Trogon *Harpactes wardi*
Blyth's Kingfisher *Alcedo hercules*
Rufous-necked Hornbill *Aceros nipalensis*
Narcondam Hornbill *Aceros narcondami*
Nicobar Bulbul *Hypsipetes nicobariensis*
Grey-sided Thrush *Turdus feae*
Rusty-bellied Shortwing *Brachypteryx hyperythra*
White-browed Bushchat *Saxicola macrorhyncha*
White-throated Bushchat *Saxicola insignis*
Marsh Babbler *Pellorneum palustre*
Rufous-throated Wren-babbler *Spelaeornis caudatus*
Rusty-throated Wren-babbler *Spelaeornis badeigularis*
Tawny-breasted Wren-babbler *Spelaeornis longicaudatus*
Snowy-throated Babbler *Stachyris oglei*
Jerdon's Babbler *Chrysomma altirostre*
Black-breasted Parrotbill *Paradoxornis flavirostris*
Rufous-vented Prinia *Prinia burnesii*
Long-billed Bush-warbler *Bradypterus major*
Bristled Grass-warbler *Chaetornis striatus*
Brown-chested Jungle-flycatcher *Rhinomyias brunneata*
Kashmir Flycatcher *Ficedula subrubra*
White-naped Tit *Parus nuchalis*
Beautiful Nuthatch *Sitta formosa*
Green Avadavat *Amandava formosa*
Yellow Weaver *Ploceus megarhynchus*

INDIA - Data Deficient species

Brown-capped Laughingthrush *Garrulax austeni*

INDIA - Near-Threatened species

Oriental Darter *Anhinga melanogaster*
Great-billed Heron *Ardea sumatrana*
Painted Stork *Mycteria leucocephala*
Asian Openbill *Anastomus oscitans*

Black-headed Ibis *Threskiornis melanocephalus*
Red-naped Ibis *Pseudibis papillosa*
Lesser Flamingo *Phoenicopterus minor*
Jerdon's Baza *Aviceda jerdoni*
White-tailed Eagle *Haliaeetus albicilla*
Lesser Fish-eagle *Ichthyophaga humilis*
Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*
White-rumped Vulture *Gyps bengalensis*
Long-billed Vulture *Gyps indicus*
Cinereous Vulture *Aegypius monachus*
Red-headed Vulture *Sarcogyps calvus*
Nicobar Serpent-eagle *Spilornis minimus*
Andaman Serpent-eagle *Spilornis elgini*
Pallid Harrier *Circus macrourus*
Nicobar Sparrowhawk *Accipiter butleri*
Pied Falconet *Microhierax melanoleucus*
Red-necked Falcon *Falco chicquera*
Buff-throated Partridge *Tetraophasis szechenyii*
White-cheeked Partridge *Arborophila atrogularis*
Satyr Tragopan *Tragopan satyra*
Temminck's Tragopan *Tragopan temminckii*
Grey Junglefowl *Gallus sonneratii*
Sarus Crane *Grus antigone*
Long-billed Plover *Charadrius placidus*
Grey-headed Lapwing *Vanellus cinereus*
Great Snipe *Gallinago media*
Asian Dowitcher *Limnodromus semipalmatus*
Nilgiri Wood-pigeon *Columba elphinstonii*
Andaman Wood-pigeon *Columba palumboides*
Andaman Cuckoo-dove *Macropygia rufipennis*
Nicobar Pigeon *Caloenas nicobarica*
Derbyan Parakeet *Psittacula derbiana*
Nicobar Parakeet *Psittacula caniceps*
Brown Coucal *Centropus andamanensis*
Andaman Scops-owl *Otus balli*
Spot-bellied Eagle-owl *Bubo nipalensis*
Tawny Fish-owl *Ketupa flavipes*
Andaman Hawk-owl *Ninox affinis*
Sri Lanka Frogmouth *Batrachostomus moniliger*
Brown-winged Kingfisher *Pelargopsis amauropterus*
Malabar Grey-hornbill *Ocyceros griseus*
Malabar Pied-hornbill *Anthracoceros coronatus*
Brown Hornbill *Anorrhinus tickelli*
Yellow-rumped Honeyguide *Indicator xanthonotus*
Andaman Woodpecker *Dryocopus hodgei*
Blue-naped Pitta *Pitta nipalensis*
White-bellied Minivet *Pericrocotus erythropygius*
Grey-headed Bulbul *Pycnonotus priocephalus*
Yellow-throated Bulbul *Pycnonotus xantholaemus*
Pied Thrush *Zoothera wardii*
Long-billed Thrush *Zoothera monticola*
Black-breasted Thrush *Turdus dissimilis*
Gould's Shortwing *Brachypteryx stellata*
White-bellied Shortwing *Brachypteryx major*
Firethroat *Luscinia pectardens*
Rufous-breasted Bush-robin *Tarsiger hyperythrus*
Blue-fronted Robin *Cinclidium frontale*
Purple Cochoa *Cochoa purpurea*
Green Cochoa *Cochoa viridis*
Jerdon's Bushchat *Saxicola jerdoni*
Chestnut-backed Laughingthrush *Garrulax nuchalis*
Yellow-throated Laughingthrush *Garrulax galbanus*

Wynaad Laughingthrush *Garrulax delesserti*
Rufous-breasted Laughingthrush *Garrulax cachinnans*
Grey-breasted Laughingthrush *Garrulax jerdoni*
Striped Laughingthrush *Garrulax virgatus*
Slender-billed Scimitar-babbler *Xiphirhynchus superciliaris*
Long-billed Wren-babbler *Rimator malacoptilus*
Spotted Wren-babbler *Spelaeornis formosus*
Wedge-billed Wren-babbler *Sphenocichla humei*
Slender-billed Babbler *Turdoides longirostris*
Giant Babax *Babax waddelli*
Black-headed Shrike-babbler *Pteruthius rufiventer*
Yellow-throated Fulvetta *Alcippe cinerea*
Rufous-throated Fulvetta *Alcippe rufogularis*
Grey Sibia *Heterophasia gracilis*
Black-browed Parrotbill *Paradoxornis atrosuperciliaris*
Rufous-headed Parrotbill *Paradoxornis ruficeps*
Grey-crowned Prinia *Prinia cinereocapilla*
Tytler's Leaf-warbler *Phylloscopus tytleri*
Yellow-vented Warbler *Phylloscopus cantator*
Broad-billed Warbler *Tickellia hodgsoni*
Broad-tailed Grassbird *Schoenicola platyura*
Brown-breasted Flycatcher *Muscicapa muttui*
Black-and-rufous Flycatcher *Ficedula nigrorufa*
Nilgiri Flycatcher *Eumyias albicaudata*
White-bellied Blue-flycatcher *Cyornis pallipes*
White-throated Tit *Aegithalos niveogularis*
Orange Bullfinch *Pyrrhula aurantiaca*
Spot-winged Starling *Saroglossa spiloptera*
White-headed Starling *Sturnus erythropygius*
Collared Myna *Acridotheres albocinctus*
Andaman Drongo *Dicrurus andamanensis*
White-bellied Treepie *Dendrocitta leucogastra*
Andaman Treepie *Dendrocitta bayleyi*

NEPAL - Threatened species

Spot-billed Pelican *Pelecanus philippensis*
Lesser Adjutant *Leptoptilos javanicus*
Greater Adjutant *Leptoptilos dubius*
Pink-headed Duck *Rhodonessa caryophyllacea*
Ferruginous Duck *Aythya nyroca*
Baer's Pochard *Aythya baeri*
Pallas's Sea-eagle *Haliaeetus leucoryphus*
Greater Spotted Eagle *Aquila clanga*
Lesser Kestrel *Falco naumanni*
Swamp Francolin *Francolinus gularis*
Cheer Pheasant *Catreus wallichi*
Bengal Florican *Houbaropsis bengalensis*
Lesser Florican *Sypheotides indica*
Wood Snipe *Gallinago nemoricola*
Black-bellied Tern *Sterna acuticauda*
Indian Skimmer *Rynchops albicollis*
Blyth's Kingfisher *Alcedo hercules*
White-throated Bushchat *Saxicola insignis*
Rufous-throated Wren-babbler *Spelaeornis caudatus*
Jerdon's Babbler *Chrysomma altirostre*
Black-breasted Parrotbill *Paradoxornis flavirostris*
Bristled Grass-warbler *Chaetornis striatus*
Kashmir Flycatcher *Ficedula subrubra*

NEPAL - Near-Threatened species

Oriental Darter *Anhinga melanogaster*

Painted Stork *Mycteria leucocephala*
Asian Openbill *Anastomus oscitans*
Black-headed Ibis *Threskiornis melanocephalus*
Red-naped Ibis *Pseudibis papillosa*
White-tailed Eagle *Haliaeetus albicilla*
Lesser Fish-eagle *Ichthyophaga humilis*
Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*
White-rumped Vulture *Gyps bengalensis*
Long-billed Vulture *Gyps indicus*
Cinereous Vulture *Aegypius monachus*
Pallid Harrier *Circus macrourus*
Red-necked Falcon *Falco chicquera*
Satyr Tragopan *Tragopan satyra*
Sarus Crane *Grus antigone*
Grey-headed Lapwing *Vanellus cinereus*
Spot-bellied Eagle-owl *Bubo nipalensis*
Tawny Fish-owl *Ketupa flavipes*
Yellow-rumped Honeyguide *Indicator xanthonotus*
Blue-naped Pitta *Pitta nipalensis*
Pied Thrush *Zoothera wardii*
Long-billed Thrush *Zoothera monticola*
Gould's Shortwing *Brachypteryx stellata*
Rufous-breasted Bush-robin *Tarsiger hyperythrus*
Purple Cochoa *Cochoa purpurea*
Green Cochoa *Cochoa viridis*
Spot-breasted Laughingthrush *Garrulax merulinus*
Slender-billed Scimitar-babbler *Xiphirhynchus superciliaris*
Nepal Wren-babbler *Pnoepyga immaculata*
Slender-billed Babbler *Turdoides longirostris*
Black-headed Shrike-babbler *Pteruthius rufiventer*
Grey-crowned Prinia *Prinia cinereocapilla*
Tytler's Leaf-warbler *Phylloscopus tytleri*
Yellow-vented Warbler *Phylloscopus cantator*
Broad-billed Warbler *Tickellia hodgsoni*
White-throated Tit *Aegithalos niveogularis*
Spot-winged Starling *Saroglossa spiloptera*

PAKISTAN - Threatened species

Dalmatian Pelican *Pelecanus crispus*
White-headed Duck *Oxyura leucocephala*
Lesser White-fronted Goose *Anser erythropus*
Marbled Teal *Marmaronetta angustirostris*
Ferruginous Duck *Aythya nyroca*
Pallas's Sea-eagle *Haliaeetus leucoryphus*
Greater Spotted Eagle *Aquila clanga*
Imperial Eagle *Aquila heliaca*
Lesser Kestrel *Falco naumanni*
Western Tragopan *Tragopan melanocephalus*
Cheer Pheasant *Catreus wallichi*
Siberian Crane *Grus leucogeranus*
Sociable Lapwing *Vanellus gregarius*
Black-bellied Tern *Sterna acuticauda*
Indian Skimmer *Rynchops albicollis*
Pale-backed Pigeon *Columba eversmanni*
White-browed Bushchat *Saxicola macrorhyncha*
Jerdon's Babbler *Chrysomma altirostre*
Rufous-vented Prinia *Prinia burnesii*
Long-billed Bush-warbler *Bradypterus major*
Bristled Grass-warbler *Chaetornis striatus*
Kashmir Flycatcher *Ficedula subrubra*

PAKISTAN - Near-Threatened species

Oriental Darter *Anhinga melanogaster*
Painted Stork *Mycteria leucocephala*
Asian Openbill *Anastomus oscitans*
Black-headed Ibis *Threskiornis melanocephalus*
Red-naped Ibis *Pseudibis papillosa*
Lesser Flamingo *Phoenicopterus minor*
White-tailed Eagle *Haliaeetus albicilla*
White-rumped Vulture *Gyps bengalensis*
Cinereous Vulture *Aegypius monachus*
Red-headed Vulture *Sarcogyps calvus*
Pallid Harrier *Circus macrourus*
Red-necked Falcon *Falco chicquera*
Little Bustard *Tetrax tetrax*
Yellow-rumped Honeyguide *Indicator xanthonotus*
Tytler's Leaf-warbler *Phylloscopus tytleri*
White-throated Tit *Aegithalos niveogularis*
Orange Bullfinch *Pyrrhula aurantiaca*

SRI LANKA - Threatened species

Spot-billed Pelican *Pelecanus philippensis*
Lesser Adjutant *Leptoptilos javanicus*
Sociable Lapwing *Vanellus gregarius*
Spoon-billed Sandpiper *Eurynorhynchus pygmeus*
Sri Lanka Wood-pigeon *Columba torringtoni*
Red-faced Malkoha *Phaenicophaeus pyrrhocephalus*
Green-billed Coucal *Centropus chlororhynchus*
Sri Lanka Whistling-thrush *Myiophonus blighi*
Ashy-headed Laughingthrush *Garrulax cinereifrons*
Kashmir Flycatcher *Ficedula subrubra*
Sri Lanka Magpie *Urocissa ornata*

SRI LANKA - Near-Threatened species

Oriental Darter *Anhinga melanogaster*
Painted Stork *Mycteria leucocephala*
Asian Openbill *Anastomus oscitans*
Black-headed Ibis *Threskiornis melanocephalus*
Pallid Harrier *Circus macrourus*
Spot-bellied Eagle-owl *Bubo nipalensis*
Chestnut-backed Owlet *Glaucidium castanonotum*
Sri Lanka Frogmouth *Batrachostomus moniliger*
Malabar Pied-hornbill *Anthracoceros coronatus*
Yellow-eared Bulbul *Pycnonotus penicillatus*
Pied Thrush *Zoothera wardii*
Spot-winged Thrush *Zoothera spiloptera*
Sri Lanka Bush-warbler *Bradypterus palliseri*
Brown-breasted Flycatcher *Muscicapa muttui*
Dull-blue Flycatcher *Eumyias sordida*
White-throated Flowerpecker *Dicaeum vincens*
White-faced Starling *Sturnus senex*

THE DATA GATHERING PROCESS

In the course of the Asian Red Data Book Project, it will be necessary to gather all of the information which is available on the globally threatened birds of the region, and their habitats and the threats which they face. This will form the basis of the species texts to be published in the book, and information on key sites for their conservation will also be used in the Asian Important Bird Areas Project.

Information on threatened species comes in a wide variety of formats. The following four main sources of data have been identified:

- literature
- people
- museums
- maps and gazetteers

A technique to gather the data is being developed, which is outlined below but will be discussed in more detail at the workshop. Simple data forms and databases are being designed for this work.

In the Africa and Americas bird RDBs, the threatened species accounts were subdivided under the following seven headings:

- Distribution
- Population
- Ecology
- Threats
- Conservation measures taken
- Conservation measures proposed
- Remarks

It is proposed that data should be extracted from literature references, museum specimen labels, etc. and entered (either on a form or in a database) under one or more of these headings. Note that information on distribution will include records of threatened birds at particular localities. This locality information will be entered onto a separate form, which is described below.

An important aspect of the project is how the information collected by the various participants in the project will be pooled, so that species texts can be written. This will be discussed in detail at the workshop.

Species data

Forms and databases will be developed to enter Red Data Book information for a single species. These should include the items of data described below.

* Red Data Book compiler's name
The name of the person entering the data onto the form or into the database.

* Reference/name of recorder/museum name
The source of the data being entered onto the form.

* Threatened species name
It is proposed that species names should be standardised to those used in the Compact Handbook of the birds of India and Pakistan *(Ali and Ripley 1987), as this is available throughout the region.*

* Synonym

A record of the species name (and any subspecies name) used in the data source, if different to Ali and Ripley (1987).

* Species data
Subdivide the data under one or more of the following Red Data Book account headings.

* Distribution
General information on the distribution of this species. If specific localities are mentioned, details should be recorded separately for each locality (see below).

* Population
Information on the status, abundance and population trends of this species in all or part of its range. If population information is given which is specific to particular localities, details should be recorded separately for each locality (see below).

* Ecology
Details of the habitat, food and breeding of this species. If any of this information is specific to only one locality, details should be recorded separately for this locality (see below).

* Threats
Details of any threats to this species. If any threats are specific to particular localities, details should be recorded separately for each locality (see below).

* Conservation measures taken
Details of any measures taken which may promote the conservation of this species. If any of this information is specific to only one locality, details should be recorded separately for this locality (see below).

* Conservation measures proposed
Details of any measures which are proposed for the conservation of this species. If any of this information is specific to only one locality, details should be recorded separately for this locality (see below).

* Remarks
Any information which does not naturally fit one of the six headings above, e.g. discussion of taxonomy.

Locality data

Forms and databases will be developed to enter Red Data Book information on the occurrence of a species at a single locality. These should include the items of data described below.

* Red Data Book compiler's name
The name of the person entering the data onto the form or into the database.

* Reference/name of recorder/museum name
The source of the data being entered onto the form.

* Threatened species name
It is proposed that species names should be standardised to those used in the Compact Handbook of the birds of India and Pakistan *(Ali and Ripley 1987), as this is available throughout the region.*

* Synonym
A record of the species name (and any subspecies name) used in the data source, if different to Ali and Ripley (1987).

* Recording locality
Details of the locality as provided in the data source. These can be broken down into the six items of information described below.

* Locality name

The name of the locality itself, as it would be marked on a map or listed in a gazetteer, e.g. Coimbatore.

- Qualifier

  Any qualification of the locality which could potentially change the coordinates allocated to it, e.g. "10 km east of".
- Descriptor

  Any information given which will help to pinpoint the locality and/or increase confidence that it has been located successfully, e.g. "a few kilometres east of Bombay".
- Country name
- Upper political subdivision

  The highest level of political subdivision of each country, e.g. State in India.
- Lower political subdivision

  The second level of political subdivision in each country.

* Geographical coordinates of the recording locality

The longitude and latitude in degrees and minutes. This is sometimes given in the data source, but it is usually necessary to refer to gazetteers and maps to find the coordinates. It is important to record the source(s) used to allocate the coordinates.

Status

Any information on the status of the threatened species at this locality which is given in the data source. This could include the items listed below.

- Type(s) of record

  Possible types are specimens collected, photographed, tape recorded, sight record, identification of species thought to be incorrect or unreliable, unknown, etc.
- Dates of records

  Information on how often the locality was visited, how frequently the species was recorded there and at what time(s) of year.
- Population/abundance

  Estimates of species' population or description of its abundance based upon observations or the results of survey work.
- Ecological information

  Any information on the habitat use and/or altitudinal range of this species at this locality.

Conservation status

Information on the conservation of this species and its habitat at this locality. Note that this data will be required for the forthcoming Important Bird Areas in Asia Project.

- Threats

  Details of any threats to the species (e.g. habitat destruction, disturbance) at this locality.
- Conservation measures

  Any conservation measures which have already been taken, or are being proposed, which are relevant to the conservation of this threatened species at this locality (e.g. protected areas status, control of hunting).

Remarks

Any additional information relating to this species at this locality (or to the locality itself).

EXAMPLES OF RED DATA BOOK TEXTS FROM *THREATENED BIRDS OF THE AMERICAS*

HELMETED WOODPECKER *Dryocopus galeatus*

Records of this rare woodpecker are confined to primary tracts of Atlantic Forest in southern south-east Brazil, eastern Paraguay and northernmost Argentina, where there have been many records in very recent years. It still, however, requires urgent study and survey using voice playback, to clarify its status and ecological niche.

DISTRIBUTION The Helmeted Woodpecker is endemic to the southern Atlantic (Paranense) Forest region of south-east Brazil, eastern Paraguay and north-east Argentina (Misiones). In the following account, records are listed, from north to south with coordinates taken, unless otherwise stated, from Paynter (1985, 1989) and Paynter and Traylor (1991).

Brazil The species is known from São Paulo, Paraná, Santa Catarina and at least formerly Rio Grande do Sul, but it is noteworthy that it has been recorded from two and possibly all three frontier areas of southernmost Mato Grosso do Sul (Porto Camargo in easternmost Paraná, Capitán Bado in westernmost Concepción, Paraguay, and possibly the Sierra de Maracaju, northernmost Canindeyú, Paraguay), indicating that it might yet be (or once have been) found in the state.

São Paulo Records are from: Rio Feio, 21°26'S 50°59'W, 1901 (Pinto 1938); Ribeirão Caingang ("Ribeirão dos Bugres"), 21°40'S 51°32'W, April 1901 (Pinto 1938); Vitoriana ("Victoria"), April 1902 (specimen in AMNH); "Aracuahy" mountain near Ipanema, April, May, June and December in the years 1819-1822 (von Pelzeln 1868-1871); Rio Carmo road, Fazenda Intervales, 850 m, 24°17'S 48°25'W, near Capão Bonito, February 1987 (Willis 1987); Iguape, October 1901 (Pinto 1938), this presumably the locality specified as Baurú in von Ihering and von Ihering (1907); Carlos Botelho State Park, 900 m, November 1988 (C. Yamashita *in litt.* 1988); Ilha do Cardoso State Park, recently (P. Martuscelli *in litt.* 1991).

Paraná Records are from: Jacarezinho, March and April 1901 (Pinto 1938; specimens in MZUSP), this being present-day Ourinho (see Distribution: Paraná under Golden-capped Parakeet *Aratinga auricapilla*); Porto Camargo, January 1954 (Pinto and de Camargo 1955; hence King 1978-1979, Sick 1985); Cândido de Abreu, November 1929 (specimen in FMNH); Castro, June 1914 (Pinto 1938); Iguaçu National Park on the Poço Preto trail, October 1988 (TAP, O. Læssøe *in litt.* 1989), November 1988 (P. K. Donahue *in litt.* 1989), May 1989 (M. Pearman *in litt.* 1990) and August and November 1990 (M. Castelino and D. Finch *per* J. C. Chebez *in litt.* 1992).

Santa Catarina Records are from: Canoinhas ("Ouro Verde"), 26°10'S 50°24'W, Serra do Lucindo, 750 m, May 1929 (specimen in AMNH); Poço Preto, 750 m, April 1929 (specimen in AMNH); Joinville, specimen (in BMNH) received in January 1890; Trombudo Alto (untraced, but perhaps near Trombudo Central; the rio Trombudo is an affluent of the Itajaí d'Oeste: J. F. Pacheco *in litt.* 1992), 1946 (Sick 1985).

Rio Grande do Sul Records are from: São Pedro (de Alcântara) at the coastal lagoons, October 1928 (specimen in AMNH); Poço das Antas (Gliesch 1930), presumably around 1920 (Belton 1984-1985); Taquara, August 1883 (von Berlepsch and von Ihering 1885). The species is presumed extinct in the state, but a record inside Argentina (see below), just north across the frontier from the Turvo Forest Reserve (for which see Albuquerque 1977) near the Santa Catarina border, indicates its possible survival in the area (Belton 1984-1985).

Paraguay The species has been recorded from a wide area of the eastern half of the country.

Amambay Single specimens are from Cerro Amambay, near Capitán Bado, August 1938, and from 47 km south-west of Cerro Amambay, October 1938 (Storer 1989b).

Canindeyú Records are from north of Curuguaty: 13 km, specimen, July 1979 (Storer 1989b); 10 km, sighting, 15 September 1989, and 7 km, probable sighting, next day (P. A. Scharf and F. E. Hayes *in litt.* 1991). There was another probable sighting at Estancia La Fortuna near Mbaracayú (Maracaju), June 1991 (R. S. Ridgely *in litt.* 1991; treated as a certain record in *Winging It* 4,4 [1992]: 53).

Caaguazú A specimen was collected at "Piccada de Aios" (= modern-day Coronel Oviedo: Paynter 1989) between the end of June and mid-August 1893 (Salvadori 1895b).

Alto Paraná The species has been recorded recently from the Itaipu area, i.e. near the dam (N. Pérez and A. Colman *in litt.* 1988), and within this general region one was seen 20 km north of Hernandarias in July 1982 (M. Nores and D. Yzurieta *in litt.* 1986) and a pair was seen in or near the Itabo Forest

Reserve in June 1991 (R. S. Ridgely *in litt.* 1991). The undated record from Puerto Bertoni, 25°38'S 54°40'W (Bertoni 1939), is presumably that mentioned as from 25°43'S by Bertoni (1901).

Paraguarí Three birds were collected at Sapucaí, 25°40'S 56°55'W, in July and August 1904 (Chubb 1910; specimens in BMNH, MACN).

Itapúa A specimen (in MNHN) was collected in July 1948 at Puerto Edelira, which is on the río Paraná north of Capitán Meza (J. C. Chebez *in litt.* 1992), Capitán Meza being at 27°01'S 55°34'W (Paynter 1989).

Argentina Records are all from Misiones province, as follows:
Puerto Aguirre (now part of Puerto Iguazú), 25°36'S 54°35'W, July 1920 (specimen in MCZ); "Iguazú", October 1900 (specimen in MACN); Iguazú National Park (and possibly environs), e.g. immature seen on the Bernabé Méndez trail, May 1989, and a female seen 500 m from the El Timbo ranger post also near the Bernabé Méndez trail, July 1991 (M. Pearman *in litt.* 1990, 1991), with a further 14 records from 1900 (one), 1985 (two), 1988 (two), 1990 (four) and 1991 (five) compiled and to be published by J. C. Chebez (*in litt.* 1992); Sierra Morena, untraced but in Iguazú department (*per* J. C. Chebez *in litt.* 1992); arroyo Urugua-í, 25°54'S 54°36'W, km 10, March 1958 (two specimens in AMNH), km 30, August 1954 and October 1957 (specimens in AMNH, MACN); near Almirante Brown (Comandante Andresito), untraced but in General Belgrano department, 1989 (*per* J. C. Chebez *in litt.* 1992); Araucaria Provincial Park, San Pedro department, 1989 (*per* J. C. Chebez *in litt.* 1992); arroyo Yabotí-miní, 30 km north of its estuary, at 26°57'S 53°51'W, San Pedro department, close to the Turvo reserve in Brazil, February 1991 (J. Baldo *per* J. C. Chebez and M. Nores *in litt.* 1992, whence also coordinates); San Vicente, untraced but in Guaraní department, 1988 (*per* J. C. Chebez *in litt.* 1992); Lanusse (Colonia Gobernador J. J. Lanusse), 26°00'S 54°17'W, 1979 (C. C. Olrog *per* M. Nores and D. Yzurieta *in litt.* 1986), this probably the same as the record in Lucero and Alabarce (1980); Puerto Rico, untraced but in Libertador General San Martín department, 1988 (*per* J. C. Chebez *in litt.* 1992); Colonia Victoria, untraced but (according to Paynter 1985) probably near Eldorado at 26°24'S 54°38'W, August 1969 (specimen in LSUMZ); Eldorado itself, 1925 (*per* J. C. Chebez *in litt.* 1992); arroyo Piray-miní, near the confluence of arroyo Coral, untraced but in Eldorado department, 1991 (*per* J. C. Chebez *in litt.* 1992); Tobunas, 26°28'S 53°54'W, October 1953 and July 1959 (seven specimens in FMNH, LACM, MACN); Dos de Mayo, 27°02'S 54°39'W, 1979 (C. C. Olrog *per* M. Nores and D. Yzurieta *in litt.* 1986); San Ignacio, January 1942 (Anon. 1942); arroyo Anselmo and Puerto San Juan, both untraced but in Candelaria department and both south of San Ignacio, 1988 and 1991 respectively (*per* J. C. Chebez *in litt.* 1992); Campo San Juan, near San Ignacio, January 1992 (J. Baldo *per* M. Nores *in litt.* 1992); Bonpland (= Bonplano), 27°29'S 55°29'W, 1915 (*per* J. C. Chebez *in litt.* 1992). The record above that corresponds to the one reported by C. C. Olrog (in Belton 1984-1985) as being due north of Rio Grande do Sul's Turvo Forest Reserve appears to be Dos de Mayo, Chebez (1986) indicating that the area in question was at the junction of Guaraní and San Pedro departments; but as indicated above the recent record from arroyo Yabotí-miní was also very close to Turvo.

POPULATION The chronic and common opinion is that the Helmeted Woodpecker is a rare or very rare species (von Berlepsch and von Ihering 1885, Salvadori 1895b, von Ihering 1898, Chubb 1910, Short 1982, Sick 1985, Canevari *et al.* 1991; also D. F. Stotz *in litt.* 1988, F. E. Hayes *in litt.* 1991). However, the speculation that it might even be extinct (Short 1982) has been followed by the expectation (bolstered by the many previously unpublished records above) that it might not prove so very rare as feared (M. Nores and D. Yzurieta *in litt.* 1986, R. S. Ridgely *in litt.* 1991, J. C. Chebez *in litt.* 1992), although caution has been urged in the field identification of the species (B. M. Whitney *in litt.* 1991; see Remarks). The population in the adjacent Iguaçu and Iguazú National Parks in Brazil and Argentina seems likely to be the largest and safest, yet the general failure of birds to respond to tape playback in the former, over many kilometres of track, suggests a genuine rarity even there (TAP); however, it may prove not to be so rare in the Serra de Paranapiacaba (C. Yamashita *in litt.* 1988). Numbers on Ilha do Cardoso appear very small but stable (P. Martuscelli *in litt.* 1991).

ECOLOGY Very little is known. The bird dwells in forest in valleys and on mountains (Sick 1985), and was found in misty cloud-forest at Intervales (Willis 1987) and Carlos Botelho State Park (C. Yamashita *in litt.* 1988). It climbs trunks and central branches of trees, preferably at middle height (Canevari *et al.* 1991): a bird in Iguazú National Park, July 1991, was foraging on large trunks, 4-7 m up, in heavy primary forest (M. Pearman *in litt.* 1991), another in the Sierra Morena was foraging at mid-height on a laurel negro *Nectandra saligna* (J. C. Chebez *in litt.* 1992), and a third in Iguaçu foraged in low-lying forest (understorey dominated by bamboo) c.8-9 m above the ground on trunks of medium-sized trees c.25 m tall, pecking and probing in loose bark covered with mosses and lichens (TAP). This use of the middle storey appears to separate the species from the Lineated Woodpecker *Dryocopus lineatus* and Robust Woodpecker *Campephilus robustus*, which tend to haunt the upper storey (J. C. Chebez *in litt.* 1992), although it has been postulated that the species is a mimic of the latter (Willis 1989). Despite the presence of forest up to 900 m on Ilha do Cardoso (the highests point on the island), the species seems to be restricted to forest at 40-200 m (P. Martuscelli *in litt.* 1991), although it has been recorded in Santa Catarina at 750 m (see Distribution). Many of the recent records from Argentina have been from very modified areas, three of them adjacent to towns, but the species still appears to need patches of pristine forest or at least logged forest which still retains some characteristics of pristine forest (J. C. Chebez *in litt.* 1992).

The diet remains unreported. Because moult is from April to July, the breeding season was anticipated to fall between November and February (Short 1982). In fact, the only confirmed breeding record stems from late September and early October 1985, when a nest was found 2.3 m (presumably; "2.30 cm" in original) up in an unidentified tree at the arroyo Ñandú camp-site in Iguazú National Park (Chebez 1986b). A bird was at an apparent nest-hole in a tree by the side of the road in Iguaçu National Park, November 1988 (P. K. Donahue *in litt.* 1989), and on the same road in August 1990 a pair were behaving very territorially (M. Castelino *per* J. C. Chebez *in litt.* 1992). The record from San Ignacio, January, was of a juvenile male (Anon. 1942).

THREATS The rarity of this species is likely in part to be natural, and may be owing to a particular habitat specialization such as an association with a certain bamboo (B. M. Whitney *in litt.* 1991). It has certainly been observed that it seems to require large tracts of forest, and of course must therefore have suffered from their constant diminution and fragmentation (F. E. Hayes *in litt.* 1991); yet against this are recent observations from Misiones, Argentina, of birds in fairly small and sometimes much disturbed forested areas, suggesting that habitat loss may not be so serious a threat as might be expected. In eastern Paraguay some of the bird's range around the Itaipu Dam was being permanently inundated (N. Pérez and A. Colman *in litt.* 1988), and the areas along the Urugua-í in Argentina have suffered the same fate (J. C. Chebez *in litt.* 1992). The one nest ever recorded apparently failed because, by some extraordinary quirk, the tree was cut down (P. Canevari *in litt.* 1987).

MEASURES TAKEN The Helmeted Woodpecker is protected under Brazilian law (Bernardes *et al.* 1990), and has been recorded from Carlos Botelho State Park, Ilha do Cardoso State Park and Iguaçu National Park in Brazil, the Itabo Reserve in Paraguay, and Iguazú National Park and Araucaria Provincial Park in Argentina, where it probably also occurs in Urugua-í and Moconá Provincial Parks (J. C. Chebez *in litt.* 1992).

MEASURES PROPOSED Taped voice playback, used sensitively, offers perhaps the most efficient method of determining the presence or absence of the species in particular areas, and any general avifaunal surveys anywhere in the range could include this low-key component. Work is also needed to gather as much as possible on its ecology and needs, so that management can be contemplated; such studies could perhaps best be undertaken in either Iguaçu or Iguazú National Parks, or even both. A survey is needed of Turvo Forest Reserve in Rio Grande do Sul, and at some stage an investigation of the southernmost area of Mato Grosso do Sul south of 22°S might be appropriate. In eastern Paraguay the status of the bird north of Curuguaty and in the Itaipu Dam region requires elucidation. In Argentina the species occurs in four areas that are proposed for protection, namely Yabotí, Puerto San Juan, Piray-miní and Sierra Morena (J. C. Chebez *in litt.* 1992).

REMARKS B. M. Whitney (*in litt.* 1991) pointed out that some recent field observations (not necessarily in this account, as there appear to have been several more from Iguazú National Park) may possibly have involved Lineated Woodpeckers, which in that region have much rusty colour in their underparts not mentioned or depicted in field guides, and he urged all observers to provide full descriptions. However, C. Yamashita (*in litt.* 1988) considered the opposite may also sometimes happen, with Helmeted Woodpeckers being identified as Lineated, and going under-recorded as a result. J. C. Chebez (*in litt.* 1992), aware of these concerns, has reaffirmed his confidence in the veracity of the records he supplied for this account.

The species appears to be morphologically and behaviourally intermediate between *Celeus* and *Dryocopus* woodpeckers: the small pale bill, manner of foraging, and drum pattern are all rather *Celeus*-

like, whereas the plumage pattern is certainly like *D. lineatus*, while the strident 4-5 note song is intermediate, having the loudness and pattern of a *Dryocopus* but the emphatic quality of several *Celeus* species (TAP).

DWARF JAY *Cyanolyca nana*

Known only from temperate zone forests in Veracruz and Oaxaca, Mexico, this rare jay is currently to be found in just one area of Oaxaca, and has apparently been extirpated from much of its historical range by widespread habitat destruction and fragmentation.

DISTRIBUTION The Dwarf Jay is endemic to south-eastern Mexico in the mountains on the Veracruz side of the border with Puebla, and in the sierras de Juárez, Aloapaneca and Zempoaltepec, Oaxaca. AOU (1983) listed the species also for Puebla, but there seems to be no evidence for this. A specimen reportedly from the state of México is not considered here (see Remarks). Unless otherwise stated, coordinates for Veracruz are from OG (1956a) and for Oaxaca from Binford (1989).
Veracruz Localities are from two general areas where the high mountains of central Puebla extend into Veracruz. The northernmost area of the species's range includes Cofre de Perote (19°29'N 97°08'W), where two males were collected in July 1888 (in BMNH), and Las Vigas–Jalapa. Jalapa is a locality given on specimens in ANSP and BMNH, Sclater (1857a, 1859a) qualifying this as in the "vicinity of" or within the "environs of" Jalapa. Las Vigas (19°38'N 97°05'W), where a male (in BMNH) was taken during August 1888, is situated in "pine forest, devoid of undergrowth" at 2,440 m (Chapman 1898), the specimen presumably being taken slightly lower within the pine–oak association (see Ecology). Further south in Veracruz, the situation is similarly confused by poor labelling of skins. A specimen (in BMNH) taken reportedly at Córdoba by R. Montes de Oca (who was responsible for most of the specimens labelled "Jalapa": see Chapman 1898) seems unlikely, as Córdoba lies below 1,000 m and the bird was probably therefore collected nearer to Orizaba. Two specimens (in USNM) are labelled Orizaba, but both have other locality names, both untraced: one in December (year unknown) from "C. de Sepuxtlan", the other in October 1864 from "Mt. Azul". More recently (1942), specimens (in MLZ; see also Hardy 1971) have been taken at La Puerta; La Puerta remains untraced, but is situated somewhere at the top of the Acultzingo grade, c.50-55 km south-west of Orizaba, the distances quoted here being presumably by road, as the evidence from the coordinates is that Orizaba (18°51'N 97°06'W) and Acultzingo (18°43'N 97°19'W) are c.30 km apart. La Puerta is thus situated somewhere near the Puebla–Veracruz border but, according to the specimen and Hardy (1971), is still just within Veracruz state (apparently along route 150).
Oaxaca In the Sierra de Juárez, a male (in USNM) was collected in October 1894 at Reyes (Santos Reyes Pábalo at 17°51'N 96°52'W: Binford 1989), and a male and female (in BMNH) were taken in April 1961, at the highest pass, 60 road km south-west of Valle Nacional (L. C. Binford *in litt.* 1991); a female (in SWC) was taken "on the road to Valle Nacional from Ciudad Oaxaca" in January 1968; and another female (in MLZ) was collected 3 km west of km 211 on route 175 (untraced) in July 1963. South from here is the Sierra de Aloapaneca, where the species has been recorded exclusively in the vicinity of Cerro San Felipe. The localities involved are Cerro San Felipe (17°10'N 96°40'W), La Cumbre (part of Cerro San Felipe, near km 20), and various points in-between (see Short 1961, Hardy 1971; specimens in AMNH, CAS, LSUMZ, MLZ, MVZ, WFVZ). More generally, the species has been recorded in temperate forest near route 175 from Ciudad Oaxaca into Veracruz (Hardy 1964). The south-easternmost area in the Dwarf Jay's range is the Sierra de Zempoaltepec. Most specimens were collected in April and May 1942 near Totontepec (17°13' 96°03'), a village on the north-west slope of Cerro Zempoaltepec (in AMNH, CM, DMNH, FMNH, LACM, MLZ, MNHUK, ROM). Older records (specimens taken July 1894, in USNM) are more generally from Cerro Zempoaltepec, seemingly on the west slope of the mountain between 2,350 m and 3,200 m (Binford 1989, L. C. Binford *in litt.* 1991). Llano Verde, a collecting locality mentioned by Sclater (1859b), is untraced but apparently either in the Sierra de Juárez, or Sierra de Zempoaltepec (see Binford 1989; L. C. Binford *in litt.* 1991), but probably in the former (A. G. Navarro and A. T. Peterson *in litt.* 1991).

POPULATION Very little is known about the population of this species, especially in the Veracruz part of its range, Peterson and Chalif (1973) simply considering it rare.
Veracruz Writing before the La Puerta records were made (see Distribution), Loetscher (1941) regarded the species as a little known and apparently rare resident, having not been found in Veracruz for at least

50 years. A juvenile, two females and a male were taken in July 1942 at La Puerta, but another 50 years have now passed with no records from this state, AOU (1983) concluding that the species was resident at least formerly in the mountains of Veracruz, but is now possibly extinct there. Extensive habitat destruction at Jico, Jico Viejo, Ticuahutipan, Teocelo, etc., make it almost certain that this jay is no longer present within the state, unless they range higher into pine–fir forest than is generally thought (A. G. Navarro and A. T. Peterson *in litt.* 1991).

Oaxaca The Dwarf Jay was noted as a fairly common permanent resident (Binford 1989), although apparently very localized in its distribution (but see below). Population data come almost exclusively from the Cerro San Felipe area, c.12 km north-north-east of Ciudad Oaxaca. Between La Cumbre and Cerro San Felipe, Short (1961) made a number of observations of post-breeding flocks: on 28 August 1954, 12 Dwarf Jays were seen within a mixed-species flock in a small valley, two being seen 1.5 km north later in the day; next day, in the same area (within 2-3 km), three mixed-species flocks were located in which were four, 5-6, and 10-12 Dwarf Jays respectively. On three days over 4-8 July 1963 at Cerro San Felipe, Hardy (1971) observed flocks of 5-10 birds (associated with other species: see Ecology). Also on Cerro San Felipe, Hardy (1971) located active nests in three consecutive years: five in 1965, three in 1966 and two in 1967. At the same site, four nests were found in or near four 100 m^2 quadrats within second-growth *Quercus rugosa–Q. laurina* association (Hardy 1971). Hardy (1971) considered the density of nesting Dwarf Jays at Cerro San Felipe to be the lowest in this (oak) association (in comparison to other associations where the species was found nesting), the four pairs being completely free of interference from other pairs within their territories. The species was found to be more abundant in the pine–oak–fir association at 2,800 m, where other individuals could frequently be heard calling whilst activities at nests in these areas were being observed (Hardy 1971). By walking no more than 90 m from a nest-site, other jays were found foraging, some of which seemed to be non-breeders travelling in flocks of four or five birds, but others occurred regularly in certain nearby places, singly or in pairs, and were probably established breeders (Hardy 1971). Dwarf Jays were easily found and common in this area during the 1980s and December 1990 (S. N. G. Howell *in litt.* 1991). All of this information suggests that there is a substantial breeding population of Dwarf Jays in the Cerro San Felipe area, the species being quite common in suitable habitat, which is however suffering from increasing destruction (A. G. Navarro and A. T. Peterson *in litt.* 1991). The only available data from Totontepec, c.75 km east of Cerro San Felipe, is that 16 females and 20 males were collected there purportedly during April and May 1942 (in AMNH, CM, DMNH, FMNH, LACM, MLZ, MNHUK), suggesting that here, too, the species was quite common. Recent fieldwork by ornithologists (from MZFC) in Sierra de Juaréz produced no evidence of the species, and more limited work in the Sierra de Zempoaltepec also failed to locate the bird, almost all recent records coming from the vicinity of Cerro San Felipe (A. G. Navarro and A. T. Peterson *in litt.* 1991).

ECOLOGY The Dwarf Jay is a permanent resident in the humid montane forest of the temperate zone (see below: Goodwin 1976, AOU 1983). In the Cerro San Felipe area, it has been recorded at altitudes of between 2,440 and 3,050 m (Hardy 1964; specimens in AMNH, LSUMZ). Totontepec is situated at c.1,850 m, specimens here probably coming from above the village (in the upper cloud-forest and pine–oak zone), as this altitude is the lower limit of the temperate zone (in lower cloud-forest) (Hardy 1971, A. G. Navarro and A. T. Peterson *in litt.* 1991), the lower limit in Veracruz (of the "humid alpine zone") being c.1,670 m (Chapman 1898). The range of "1,525 m up" given by Miller *et al.* (1957) seems particularly low.

The Dwarf Jay has been observed in a number of humid montane forest associations where oak (*Quercus* spp.), pine (*Pinus* spp.) and fir (*Abies* spp.) variously make up the dominant tree species (Hardy 1971). One of these associations, where four nests were found in 1965, consisted of *Quercus rugosa* and *Q. laurina*, with fir and pine species as scattered components of the layers below the canopy; this particular association was found on the drier slopes and near the crests of ridges above 1,830 m (Hardy 1971). However, of the associations where Dwarf Jay occurred, it was sparsest in the *Quercus*, being more abundant in the pine–oak–fir habitat at c.2,800 m (see Population; Hardy 1971); areas of "equal pine and oak" are also favoured (Hardy 1964). Laurel *Litsea* spp. are also a characteristic of these associations, as is an abundant epiphytic growth of lichens, mosses and ferns (Hardy 1971). Birds were found rarely to enter the open pine forest, although one was seen to forage briefly this habitat (Hardy 1971). In early April, Dwarf Jays were occasionally seen foraging in the uppermost parts of the subtropical zone in barrancas near Cerro San Felipe: this habitat is very different in character to the pine–oak–fir association, and after nest-building was completed no jays were seen so low, breeding certainly not occurring in this zone (Hardy 1971).

The species is not restricted to undisturbed forest, frequently being found in secondary growth, as long as the preferred tree associations predominate and tracts of primary forest are nearby (Hardy 1971; see Threats). The necessary constituent of Dwarf Jay breeding habitat is a prominent subcanopy (formed by the crowns of the tallest second-layer trees and the lower branches of primary canopy trees), the primary canopy being sufficiently open to allow the development of a dense second-layer (Hardy 1971). Over 80% of foraging time is spent from the bottom of the subcanopy to the top of the shrub layer, during which invertebrates are gleaned (Coleoptera, Diptera, Hymenoptera, insect larvae and eggs have all been recorded) from and around epiphytes (Hardy 1971). Dwarf Jays occasionally enter the subcanopy but do not often forage at these upper levels (Hardy 1971).

At Cerro San Felipe, the breeding season starts in early April, when feeding flocks break up and territorial aggression, courtship feeding and nest-building begin (Hardy 1971). Between 1965 and 1967, a nearly complete nest was seen on 4 April, eggs (clutch-size three) recorded between 12 April and 5 May, with young found in the nest 16 May: of the 10 nests found during this period, all were in *Quercus* species situated either in the crown/subcrown, or on the end of a branch at 3-15 m high (averaging 7 m), i.e. all nests were in the second-layer vegetation (Hardy 1971). Two "prejuveniles" were collected at Totontepec, supposedly on 12 and 18 April 1942 (in MLZ), Hardy (1971) suggesting that they may represent an early season, but Binford (1989) concluding that the dates are probably erroneous (due to the known unreliability of M. del Toro Aviles's data); however, a male specimen apparently carrying insects and feeding young, taken on 3 April 1948 at La Cumbre (in MVZ), indicates that breeding may indeed start earlier in the year, apparently coinciding with the end of the dry season (A. G. Navarro and A. T. Peterson *in litt.* 1991). Feeding of young has also been noted as late as 21 June (1966) at Cerro San Felipe (Binford 1989), although all breeding activity appears to cease before early July (Hardy 1971).

In the non-breeding season, Dwarf Jays move about and forage in loose aggregations of 4-10 individuals, which in turn are part of mixed-species flocks (Hardy 1971). At the end of August such flocks, travelling up to 1.5 km in several hours, contained 2-12 Dwarf Jays, the main constituent species being Grey-barred Wrens *Campylorhynchus megalopterus* and Spot-crowned Woodcreepers *Lepidocolaptes affinis* (Short 1961). Between December and March, these mixed-species flocks have been recorded comprising mainly Steller's Jays *Cyanocitta stelleri*, Grey-barred Wrens, woodcreepers and orioles *Icterus* spp. (S. N. G. Howell *in litt.* 1991). The onset of the breeding season is evident in the pairing of individuals, small groups or pairs being present in breeding habitat in the mornings when courtship and nest-building occurs, the birds moving to forage in the barrancas until evening (Hardy 1971). This pattern continues until eggs are laid, flocks reforming when the young are fully independent of their parents, in early July (Hardy 1971).

THREATS The humid pine–oak forests of Oaxaca in which the Dwarf Jay lives have suffered greatly from clearance, small farm agriculture and other pressures of human activity; the species seems to exist only where most of the forest is of climax tree species (Hardy 1971; see Ecology). At Cerro San Felipe, Hardy (1971) noted evidence of the larger trees having been removed from a number of his study sites, stating that where disturbance has been especially severe, the basic character of the vegetation is so completely altered that only remnant components of the original avifauna (not including Dwarf Jay) persist. Human disturbance at the nest-site led to the immediate desertion of the nest, this reaction suggesting that either the species has few predators or when disturbance does occur it is almost always by a predator that robs the nest, removing any reason for the birds to return to it (Hardy 1971). Damage to the habitat at Cerro San Felipe is apparently increasing, and the lack of recent observations of the bird from areas in the Sierras de Juárez and Zempoaltepec (in fact almost anywhere in Oaxaca other than Cerro San Felipe) must surely be cause for concern (see Population). Extensive habitat destruction and fragmentation in Veracruz has probably led to the species's extinction there (A. G. Navarro and A. T. Peterson *in litt.* 1991).

MEASURES TAKEN There are four national parks within the immediate range of the species, three in Veracruz, one in Oaxaca. In Veracruz, Cofre de Perote is a national park although agricultural practices are carried out in at least part of the area (Vargas Márquez 1984) and the jay has apparently not been seen there since 1888 (see Distribution). Further south in the state is the Cañon del Río Blanco National Park (55,690 ha), situated along route 150 from Orizaba to the Puebla border (Anon. 1989) and apparently covering the La Puerta population last recorded in 1942 (see Population). The Pico de Orizaba National Park (19,750 ha, straddling the Puebla–Veracruz border: Anon. 1989) may well incorporate the Orizaba/Córdoba localities where the species was collected in the late 1800s (see

Distribution). Despite these, the Dwarf Jay has not been seen in Veracruz for over 50 years, and it seems that it may already be extinct there (A. G. Navarro and A. T. Peterson *in litt.* 1991). In Oaxaca, the species may occur within the Benito Juárez National Park, which is apparently situated just north of Cerro San Felipe, covering 2,737 ha (Anon. 1989); however, this protected area was apparently never officially approved, has no borders, no staff, and appears to be a classic "paper park"; meanwhile, no highland habitat (suitable for this species) is protected within Oaxaca, and Cerro San Felipe is in constant danger from logging operations (A. G. Navarro and A. T. Peterson *in litt.* 1991: see Threats).

MEASURES PROPOSED Almost all recent records of the Dwarf Jay have come from the Cerro San Felipe area, although its presence in the adjacent Benito Juárez National Park still needs to be confirmed (but see Measures Taken), suggesting that a suitable measure would be to extend the park by incorporating this area (and by giving the park itself full status and support): the protection of forest on and around Cerro San Felipe is by far the highest priority to ensure the continued survival of this jay. Basic surveys in the Sierra de Juárez and on Cerro Zempoaltepec have already drawn blank (A. G. Navarro and A. T. Peterson *in litt.* 1991); however, it is still possible that habitat suitable for this species may be found in these areas (e.g. by aerial surveys), and these forests will need to be investigated for viable populations. The status of the species in Veracruz (and its parks) needs to be confirmed, although it seems likely that it now only survives within Oaxaca (see Population).

REMARKS A specimen collected in 1867 (in BMNH) is apparently from "near Mexico City", and has led to the inclusion of México state in the range of the species (Salvin and Godman 1888-1904, hence Ridgway 1904, Hellmayr 1934, Miller *et al.* 1957, Goodwin 1976). AOU (1983) suggested that the report from this state is open to question, a conclusion that seems justified owing to the large distance between here and the Veracruz part of the species's range.